SPECIALIZE IN

CRAFTING CUSTOMIZED SOLUTIONS

FOR A DIVERSE RANGE OF NETWORKING
EQUIPMENT OFFERING SOLUTIONS
DESIGNED FOR DATA CENTERS, ISPS,
AND END-USERS ALIKE.

CORE EXPERTISE

■ SOFTWARE DESIGN & DEVELOPMENT:

We specialize in the creation of software for a variety of networking equipment, including solutions for data centers, ISPs, and end-users. Our expertise encompasses seamless integration into existing networks and a thorough analysis of interoperability issues.

■ HIGH-PERFORMANCE NETWORK SOLUTIONS:

Our team is adept at developing network and block solutions designed specifically for the high demands of modern data centers.

■ PERFORMANCE ENHANCEMENT:

We leverage DPDK/SPDK-based stacks to replace existing network/block stacks, significantly boosting performance and achieving considerable cost savings.

CORE EXPERTISE

■ APPLICATION OPTIMIZATION:

Without the need for complete rewrites, we optimize existing networking applications through the use of custom network stacks, resulting in substantial performance improvements and cost efficiencies.

■ AUTOMATED TESTING & RESULTS MANAGEMENT:

Our capabilities include the implementation of fully automated test systems and sophisticated results management systems, ensuring reliability and efficiency in performance testing.

NETWORK TECHNOLOGIES

OUR TEAM'S

EXPERTISE SPANS A COMPREHENSIVE RANGE OF

NETWORKING TECHNOLOGIES, ENSURING TOP-TIER SOLUTIONS

IN VARIOUS DOMAINS

NETWORK TECHNOLOGIES

- **LAYER 2 TECHNOLOGIES:**
  Proficient in Ethernet applications, including smart hardware L2 switching and VLANs (802.11q), along with VDSL/ADSL, PON, LTE, and MPLS technologies for diverse networking needs.

- **WIFI SOLUTIONS:**
  Specialized in the entire spectrum of 802.11 standards, offering advanced WiFi and Mesh networking solutions. Our deep understanding extends to hardware from leading manufacturers like Qualcomm, MediaTek, Intel, and Quantenna.

- **NETWORK PROTOCOLS & SERVICES:**
  Expertise in TCP/IPv4/6 stacks, integrating services such as DHCP, DNS, NTP, UPnP, and Samba for comprehensive network functionality. This includes both Linux kernel enhancements and L3 hardware acceleration. Media-related systems and protocols including IPTV, RTSP, and IP telephony provide robust solutions for multimedia and communication services.

- **NETWORK SECURITY INCLUDING NGFW:**
  Our team is adept at securing networks with advanced firewall configurations, Deep Packet Inspection (DPI), and intrusion detection and prevention systems (IDS & IPS).

- **NETWORK MANAGEMENT:**
  Experienced in implementing and managing network systems using protocols like TR-069, TR-181, TR-064, and SNMP/SMUX for efficient and reliable network operations.

- **CERTIFICATIONS AND COMPLIANCE:**
  Proud to meet industry standards with certifications from the WiFi Alliance and OCF, ensuring compatibility and security.

- **FIRMWARE AND SOFTWARE DEVELOPMENT:**
  Specializing in bootloader enhancements (U-Boot) and OpenWRT-based firmware solutions. Our build engineering and SDK development cater to third-party application integrations, facilitating custom solutions.

DATA CENTER SOLUTIONS

OUR EXPERTISE IN
DATA CENTER TECHNOLOGIES
ENCOMPASSES
A BROAD SPECTRUM OF
HARDWARE AND SOFTWARE
INTEGRATION,
ENSURING HIGH-PERFORMANCE
AND EFFICIENT OPERATIONS.
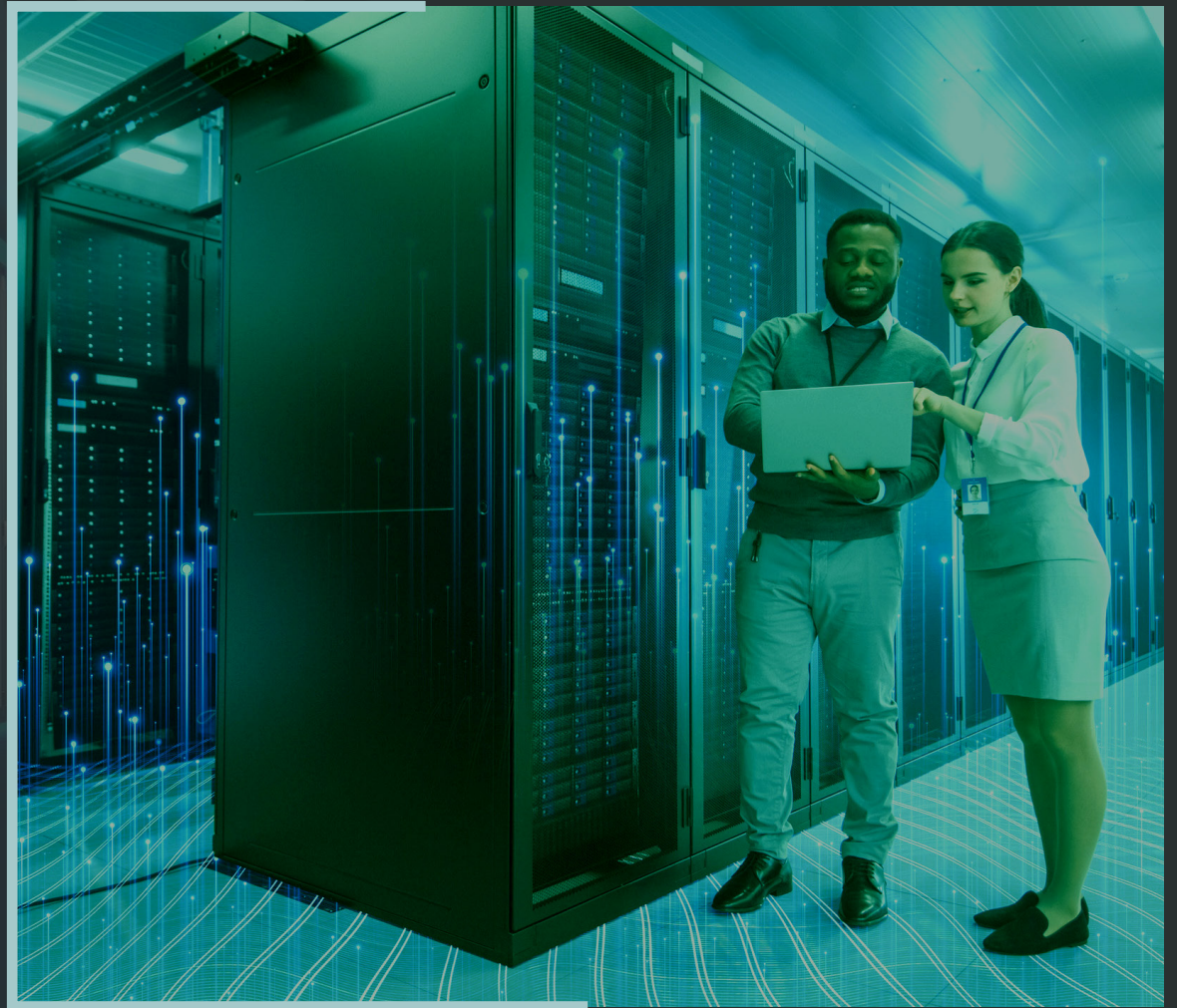
DATA CENTER SOLUTIONS

- **Integration & Optimization:**
  We excel in hardware/software integration, focusing on protocol offloads, such as checksum and segmentation, alongside zero-copy designs and traffic stream balancing. Our comprehensive support covers validation, profiling, and optimization to maximize performance.

- **Performance Enhancement Systems:**
  We deploy BPF/eBPF-based network analyzers and performance enhancement systems, designed to monitor and improve network efficiency significantly.

- **Enterprise Network Management:**
  We specialize in network management solutions for enterprise environments, offering multi-platform support (Linux, Windows, ESX) and ensuring compliance with ESX CIMPAT certification requirements.

- **Network Drivers And Tuning:**
  Our capabilities include the implementation, support, and performance tuning of network drivers, such as DPDK PMD, across Linux, BSD, Solaris, and ESX platforms. We hold certifications in IOVP, NIC, SR-IOV, and VMware ESX, and contribute to upstreaming drivers to DPDK, FreeBSD, Linux Kernel, and Illumos.

OUR APPROACH TO

NETWORK PERFORMANCE OPTIMIZATIONS

FOCUSES ON ENHANCING THE CAPABILITIES OF EXISTING INFRASTRUCTURE, ENSURING THAT OUR CLIENTS ACHIEVE SUPERIOR PERFORMANCE WITHOUT THE NEED FOR EXTENSIVE HARDWARE UPGRADES.

NETWORK PERFORMANCE OPTIMIZATIONS

- **USERLAND PROCESSING:**
  We develop solutions that elevate the performance of existing equipment by optimizing certain processes to run in userland, significantly boosting efficiency.

- **TCP/IP STACK ENHANCEMENTS:**
  Specializing in performance and latency optimizations of the TCP/IP network stack, our expertise includes low-level adjustments tailored to various architectures (x86, x86_64, Power 7, aarch64). We ensure optimal tuning for multi-core and NUMA systems, enhancing throughput and reducing latency.

- **DPDK CONTRIBUTIONS:**
  As an active participant in the DPDK open-source community, we pride ourselves on being the only Russian company among the maintainers and consistently ranking in the top contributors globally. Our involvement underscores our commitment to advancing network technologies alongside global leaders, even those with vastly larger engineering teams.Network Technologies Alongside Global Leaders, Even Those With Vastly Larger Engineering Teams.

THROUGH THESE STRATEGIC OPTIMIZATIONS, WE ENABLE OUR CLIENTS TO NOT ONLY MEET BUT EXCEED THEIR NETWORK PERFORMANCE GOALS, ENSURING THAT THEIR SYSTEMS ARE BOTH ROBUST AND HIGHLY EFFICIENT.

BLOCK SUBSYSTEM

OUR CAPABILITIES IN THE **BLOCK SUBSYSTEM ARENA** ARE GROUNDED IN DEEP TECHNICAL KNOWLEDGE AND PRACTICAL EXPERIENCE ACROSS VARIOUS ENVIRONMENTS AND PLATFORMS.

BLOCK SUBSYSTEM

- **CORE COMPETENCIES:**
  We possess a thorough understanding of the Linux kernel and SPDK, with extensive expertise in Linux internals. This includes block I/O operations, scheduling, multithreading, synchronization, interrupts, memory management, filesystems, device drivers, and virtio-block architecture.

- **STORAGE SOLUTION VALIDATION:**
  Our team excels in developing comprehensive test suites for storage solutions, ensuring they meet the stringent standards required for UNH certification. This process guarantees our solutions are reliable, efficient, and ready for enterprise deployment.

- **HARDWARE PROFICIENCY:**
  We have hands-on experience with a wide range of hardware technologies from leading manufacturers like Intel, AMD, Mellanox and others. This experience allows us to optimize storage solutions for any hardware configuration, ensuring the best possible performance and compatibility.

- **CEPH SOLUTIONS:**
  Our expertise extends to CEPH solutions, where we specialize in the development of hardware/software-accelerated clients. This enables us to offer scalable and high-performance storage solutions that meet the evolving needs of modern data centers.

LEVERAGING OUR IN-DEPTH KNOWLEDGE AND HANDS-ON EXPERIENCE, WE DELIVER BLOCK SUBSYSTEM SOLUTIONS THAT ARE NOT ONLY ROBUST AND RELIABLE BUT ALSO OPTIMIZED FOR THE HIGHEST LEVELS OF PERFORMANCE AND EFFICIENCY.

VALIDATION AND TESTING

VALIDATION AND TESTING

Automated Test Systems:
We specialize in the implementation of fully automated test systems that streamline the testing process, ensuring consistency and thoroughness in every test cycle.

Hardware and Design Validation:
Our approach includes the development of precise hardware-accurate models, utilizing C and SystemC integrated with QEMU for early-stage prototyping. These models support both synchronous and asynchronous operations, enabling detailed hardware system simulations.

Test Results Management:
Tailored to meet specific customer requirements, we develop and implement test results management systems that provide insightful analysis and facilitate decision-making based on test outcomes.

OUR TEAM HAS IMPLEMENTED AUTOMATIC TESTS FOR MOST OF THE TECHNOLOGIES
WE WORKED FROM. SOME OF THOSE TESTS ARE BECOMING
PART OF THE STANDARD COMPLIANCE TESTING OF THE RELEVANT PRODUCTS.
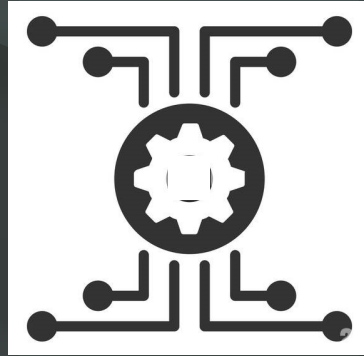
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