montavista™

MONTAVISTA® LINUX® CARRIER GRADE EDITION CHOSEN BY ISKRATEL FOR THE SI2000™ CALL SERVER

OVERVIEW

The Challenges

- To find a low-cost, carrier-grade operating system and a hardware platform for Iskratel's flagship telecommunications product.
- To continue to modernize and improve Iskratel's approach to embedded system development.
- To select an OS and a hardware platform that are widely used, and for which technical support are readily available.
- To select an OS that's not proprietary and doesn't require special knowledge.
- To bring Iskratel's product to market quickly using standards-based building blocks.

The Solution

- MontaVista Linux Carrier Grade Edition and the Intel® NetStructure™ MPCBL0001 High-Performance Single Board Computer, compliant with AdvancedTCA® specifications.

The Result

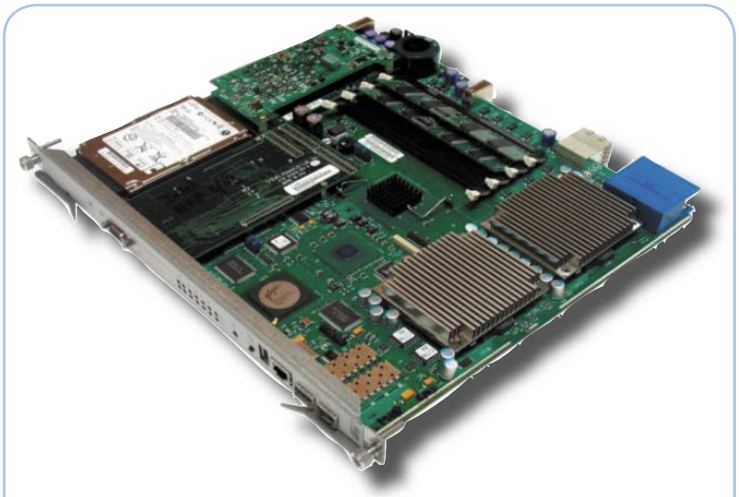
- Increased familiarity with Linux and the AdvancedTCA-based product, which can be used to advantage on other products.
- Increased profit due to lower production cost – no royalties for embedding the operating system.
- Rapid development using standards-based building blocks; short time to market.
- Product performance is excellent.
- Iskratel's product has been shipped to numerous customers, who use it profitably.

"Iskratel has been able to launch new and advanced telecommunications products consistent with the needs of our customers. The combination of a carrier grade operating system, such as MontaVista and Linux together with AdvancedTCA-based products from Intel provides our customers with a reliable, high performance and cost-effective product platform."

Franc Dolenc
Director of Iskratel Business Unit Wireline

The Company

Iskratel develops integrated communication solutions for the information society of tomorrow. It is a successful telecommunications company with more than 50 years of experience. Iskratel is widely known as an important supplier of telecommunications equipment, services and solutions, in both the carrier and enterprise segments.



ISKRATEL SI2000 CALL SERVER MODULE

Product Market and Objectives

The SI2000 Call Server is one of the key product components of Iskratel's SI2000 NG (next generation) portfolio. It is Iskratel's solution for building next generation networks that deliver full suites of CLASS-4 and CLASS-5 functionality. The SI2000 Call Server is a softswitch or media gateway controller that delivers a complete set of subscriber-side interfaces and trunk signaling to the packet telephony network. It fulfils all the expectations of service providers for local and long-distance capability; full business and residential service sets; regulatory features; and carrier-grade reliability and scalability.

The Challenges

Iskratel faced a number of formidable challenges that had to be met not only for the immediate needs of the current product being developed, but also to insure that the implementation was open and straightforward, and that the product's components could be re-used in future systems.

Among some of the specific issues that affected the choice of the operating system were:

- Compliance with Standards – Compliance with the Open Systems Development Labs (OSDL) Carrier Grade Linux specification was a fundamental issue. Integrated support for IPMI and ATCA hardware management was also required.
- Robustness – Meeting stringent reliability, availability and serviceability requirements.
- Generality – Iskratel made an early decision to use an OS that was available for a wide variety of target and host platforms.
- Experience – Iskratel had determined that Linux was their preferred platform.

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The Solution

After a detailed and wide-ranging investigation of a broad array of commercial OS and hardware platform candidates, Iskratel concluded that MontaVista Linux Carrier Grade Edition (CGE) on the Intel® NetStructure™ MPCBL0001 High-Performance Single Board Computer best met all relevant requirements. MontaVista Linux CGE includes:

- Serviceability Features — MontaVista field safe application debugger, run-time application patcher, kernel dynamic probes, and hot swap support.
- Real-time Features — O(1) scheduler (with processor affinity for symmetrical multiprocessor [SMP] systems), preemptible kernel with lock breaks for improved latency, Portable Operating System Interface (POSIX) timers with microsecond resolution, fast application start, interrupt and preemption latency measuring tools.
- Redundancy Features — Ethernet bonding, Redundant Array of Inexpensive Disks (RAID) mirroring, multihosted RAID, forced unmount and journaling file systems.
- Standards Compliance — PCI Industrial Computer Manufacturers Group (PICMG), Open Source Development Lab, Linux Standard Base (LSB), IPv6, POSIX, Intelligent Platform Management Interface (IPMI), Service Availability Forum (SAF).
- Scalability Enhancements — SMP and hyperthreading support, enhanced semaphores, kernel lock breaking and removal, and logical volume manager.
- Availability Features — kernel panic enhancements, enhanced oops handling, kernel resource monitoring, POSIX event logging, event broker, remote boot, application heartbeat and failover, fast reboot.
- Development Tools — Gcc toolchain, kdb and kgdb kernel and driver debuggers, application debugger, modern Eclipse-based integrated development environment, memory leak checkers, profilers, Linux Trace Toolkit.

Intel NetStructure MPCBL0001 High-Performance Single Board Computer

The Intel® NetStructure™ MPCBL0001 High-Performance Single Board Computer, compliant with AdvancedTCA specifications supports greater performance than on previous standards-based blade products. It is designed to interoperate with the entire family of Intel's AdvancedTCA-compliant products, such as chassis, switches or management modules.

Product Highlights

- High Performance - Intel Xeon™ processor at 2.0GHz with 400 MHz system bus and integrated 512 KB L2 Cache Intel® E7501 Chipset that supports 4-plus GBytes DDR-266 ECC registered SDRAM via four DIMM sockets
- Meets demanding I/O requirements - Backplane connections for dual Gigabit Ethernet (and dual Fibre Channel on selected models) Support today's high I/O requirements Optional dual Fibre Channel for access to high-speed storage subsystems
- High availability features – provides three watchdog timers for higher availability and application integrity. Single-slot, hot-swappable
- Management and Control - Intelligent Platform Management Controller (IPMC) monitors, controls, and performs diagnostic functions using dual Intelligent Platform Management Bus (IPMB) connections (with hardware isolation) for improved system reliability

The Result

The choice of MontaVista Linux Carrier Grade Edition for the SI2000 had the following outcome:

- Iskratel increased its familiarity with Linux and AdvancedTCA-based products; this will be an advantage with other product developments. In the past, Iskratel had used many different proprietary real-time operating systems. As a result, the company was obliged to maintain its commitment to a variety of technologies, with all the associated cost and effort. Linux provides an opportunity to reduce the variety of RTOSes, and to use a system that has become a world standard.
- The product was developed on time and within the allocated budget.
- Performance, measured in terms of throughput, is excellent. MontaVista Linux Carrier Grade Edition is more than adequate for the performance requirements of the SC2000 CS.
- There are significant numbers of SC2000 installations. The SC2000 is Iskratel's flagship product.

About Iskratel

The company's basic activity is the development of complete solutions for fixed and mobile telephony, convergence networks, next-generation networks, and network management for the communication needs of the future information society. Apart from collaboration with its partners, the company's business philosophy also includes support services – network design, training and after-sales support.

Over the past five years the company has recorded an average annual growth of 10%. Siemens AG owns just under 50% of Iskratel's shares, and is an important partner for Iskratel.

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