iHawk™
Real-Time Multiprocessors

Features

- Tightly-coupled symmetric multiprocessing (SMP) systems
- Up to 8 multi-core CPUs per system
- Up to 8 MB of cache per CPU
- 256 MB to 64 GB of memory per system
- Tower or rackmount chassis with disk, tape, and CD-RW/DVD-RW
- 10/100/1000BaseT Ethernet
- Ultra320 SCSI, SAS and SATA disk drives
- Real-Time Clock & Interrupt Module
- A wide range of I/O interfaces and PCI controller options
- Keyboard, mouse, USB and serial ports
- Optional VME I/O subsystems
- Optional high-performance 3D graphics with Open GL

Real-Time Linux® Software

- Linux operating systems
  - SUSE® Linux Enterprise Real Time
  - RedHawk™ Linux
- C/C++, Fortran and Ada compilers
- NightStar™ real-time development tools
  - NightView™ source-level debugger
  - NightTrace™ analyzer
  - NightSim™ periodic scheduler
  - NightProbe™ data monitor
  - NightTune™ system and application tuner

iHAWK

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Overview

The iHawk™ is Concurrent Computer Corporation's high-performance PCI-based computer platform for time-critical simulation, data acquisition, industrial and financial system applications. iHawk symmetric multiprocessors (SMP) feature from one to eight Xeon™ or AMD Opteron™ CPU sockets and up to 64 GB of memory in a single rackmount or tower enclosure.

iHawk systems offer leading-edge integrated circuit and packaging technology. iHawk SMP platforms run a single copy of a Concurrent real-time Linux operating system – SUSE Linux Enterprise Real Time or RedHawk Linux. iHawk solutions are also available in ultra-dense, networked blade configurations for applications requiring large numbers of processors.

Real-Time Linux Software

At the heart of each iHawk system is a Concurrent real-time Linux operating system. iHawk customers have the flexibility of choosing either SUSE Linux Enterprise Real Time integrated with SUSE Linux Enterprise 10 or RedHawk Linux compatible with Red Hat Enterprise Linux 4. Concurrent is the only vendor to provide a real-time solution compatible with both leading Linux distributions. Concurrent's strong legacy of delivering the highest performance and deterministic response is available in both environments.

Concurrent iHawk systems feature high I/O throughput, fast response to external events, and optimized interprocess communication. iHawks offer the ideal Linux environment for complex real-time applications. Concurrent Linux operating systems are based upon a multithreaded, fully preemptible Linux kernel with low-latency enhancements. True symmetric multiprocessing support includes load-balancing and CPU shielding to maximize determinism and real-time performance in mission-critical solutions. A user-level application can be guaranteed to respond to an external event in less than 30 microseconds on a shielded processor.

NightStar Tools

Concurrent real-time Linux supports Concurrent's powerful set of NightStar™ development tools. Users can debug, analyze, monitor and tune their real-time applications on iHawk multiprocessor systems or remotely from a desktop PC or laptop. Each tool runs on the iHawk target system non-intrusively, thus preserving the deterministic characteristics of the real-time application.

Real-Time Clock & Interrupt Module

The iHawk's Real-Time Clock & Interrupt Module (RCIM) is a multifunction PCI card designed for time-critical applications that require

Integrated Solutions... Real Benefits

rapid response to external events. The RCIM includes a synchronized clock readable by multiple iHawk systems, eight programmable timers, and twelve input and twelve output external interrupt lines. The RCIM is fully supported by Concurrent Linux.

An optional, on-board GPS module is available to align the RCIM's synchronized clock to GPS standard time. One GPS-equipped RCIM can synchronize all iHawks in an RCIM chain, or multiple iHawks equipped with the GPS module can operate from a common time base without any cable connections between the systems. POSIX timers based on absolute GPS time can be used to simultaneously start the execution of programs on systems which are not physically connected.

Flexible Packaging

iHawk systems come in standard tower and rackmount enclosures with up to seven integral PCI, PCI-X and PCI-Express slots and optional PCI expansion chassis. For users who require a VME I/O subsystem, an optional PCI-to-VME bridge and chassis is available. iHawk systems can contain up to eight SCSI disk drives with optional RAID capability. iHawks are also available in flexible blade configurations with up to fourteen dual or quad CPU blades in a single 7U rackmount chassis. iHawk CPU blades can be interconnected using gigabit Ethernet or high-speed fabrics such as Infiniband.

Custom Engineering From Concurrent

The Concurrent Special Systems group is available to design and deliver iHawk systems for customers who require complete competitive solutions for demanding real-time applications. Concurrent engineers can provide special packaging including ruggedized peripherals and enclosures, integrate third-party I/O cards, develop and integrate RedHawk Linux drivers, and perform application rehosting. Hardware and software is designed and developed to exact customer specifications.

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Specifications

Processors
- SMP systems – 1 to 8 Xeon or Opteron CPU sockets
- Blade systems – 2 to 4 Xeon CPUs per blade
- 1 MB to 8 MB cache per CPU

Memory
- 256 MB to 64 GB ECC SDRAM

I/O Busses
- 1 to 7 PCI slots (optional hot swap)
  - 64-bit 66, 100 and 133 MHz PCI-X
  - 32-bit 33 MHz PCI
  - x4, x8 and x16 PCIe
- 7/13-slot PCI expansion chassis
- VME64 (via PCI-to-VME bridge)

Integral I/O
- 10/100/1000BaseT Ethernet
- RS-232 serial ports
- USB ports
- Dual channel Ultra SCSI and SATA
- Parallel port
- Video port
- SVGA, AGP and PCI-Express graphics controllers

Real-Time Clock & Interrupt Module
- One 64-bit synchronization clock
- Eight 32-bit real-time clocks
- Twelve external input interrupt lines
- Twelve external output interrupt lines
- GPS option

Standard Peripherals
- 36, 73, 146 and 300 GB SCSI disks
- Up to 500 GB SATA disks
- Up to 300 GB SAS disks
- CD-RW/DVD-RW
- 3.5" 1.44 MB floppy
- DAT drives
- Keyboard/Mouse

Optional PCI I/O Controllers
- RS-232/422 asynchronous mux
- Multiport 10/100/1000BaseT Ethernet
- IEEE-488 GPIB
- MIL-STD-1553B with BC, RT, and BM functions
- ARINC 429
- A/D, D/A and digital I/O
- Reflective memory

Enclosures
- Mini-tower and full-tower chassis
- Rackmountable chassis (1U, 2U, 3U, 5U, 6U, 7U)
- 2 to 8 peripheral bays

Environmental
- Operating Temperature: 10° C to 35° C (50° F to 95° F)
- Storage Temperature: -40° C to 65° C (-40° F to 149° F)
- Operating Relative Humidity: 80%, non-condensing
- Operating Vibration: 0.25G at 3 Hz to 200 Hz for 15 min
- Storage Vibration: 0.5G at 3 Hz to 200 Hz for 15 min
- Operating Shock: 1 shock pulse of 41G for up to 2.6 ms
- Storage Shock: 6 shock pulses of 71G for up to 2 ms
- Operating Altitude: -16 m to 3,048 m (-50 ft to 10,000 ft)
- Storage Altitude: -16 m to 10,600 m (-50 ft to 35,000 ft)

Regulatory
- FCC Class A (U.S.) and DOC Class A (Canada)
- CE Mark (EN 55022 Class B, EN55024, EN61000-3-2, EN61000-3-3, IEC-801)
- RoHS Compliance
- VCCI Class A
- UL 1950
- CSA 950
- EN and IEC 60950

Service and Support
- On-site or return-to-factory (RTF) warranty
- Extended warranty
- Software support
  - Telephone advisory support
  - Product improvements
  - New releases
  - Patches to reported problems
- Other support options
  - Field installation
  - Per-call maintenance service
  - Consulting services
  - Migration assistance
  - Training at a Concurrent facility or on-site
- Custom engineering
  - Hardware/software integration
  - Device drivers
  - Customized packaging

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