

PRIMEPOWER 450 7U

4-way Rack Server – Combining capacity and growth requirements with robust performance and affordable costs

PRIMEPOWER servers are proven Unix computers based on the latest high performance processor architecture (SPARC64™V) and running the worldwide No #1 Solaris™ Operating Environment. PRIMEPOWER gives you the confidence that your IT business processes are always up and running. PRIMEPOWER servers make sure that dynamically changing IT production tasks will always be finished in time, by effectively using all of the system resources – with no resources wasted and with unique flexibility to adopt to changing priorities.

PRIMEPOWER rack-servers are the perfect answers for an IT strategy that aims to downsize datacenter infrastructure costs. Simplified operation, cost-effective scaling and enhanced quality of datacenter IT production are the main benefits. The PRIMEPOWER ServerView Suite management functions care for less troubleshooting efforts and access from anywhere at any time, to provide a stable and reliable system performance.

PRIMEPOWER 450 7U

As your customers place greater demands on business and computing resources, you are wise to include capacity for growth as strategic criteria to select your suitable reliable server platform. The PRIMEPOWER 450 7U is the right opportunity for mid-tier applications in the datacenter which need up-scaled performance and expansion options together with extreme robustness to ensure the overall quality of IT operations. Featuring up to four SPARC64™ V processors and an innovative crossbar, along with 32 GB of available memory the server uses only seven height units to provide a strong and extensive growth capacity in terms of communication, connectivity and storage. The PRIMEPOWER 450 7U raises the bar for continuous system operation with its fail-safe system design, unique error checking and correcting (ECC) features in processor, cache and memory, redundant and easy-to-replace hot swap components, that all work together to drastically reduce susceptibility to you critical business applications. This combination of performance, growth capacity and self-healing system architecture makes an already highly scalable server even more flexible and ready to meet new demands and business challenges as your organization continues to grow.



| Key Features | Benefits |
|--|---|
| <ul style="list-style-type: none"> ■ Redundant components (power supply/fan) and disk-mirroring features allow vital components (power supply/fan/disk drive/built-in tape drive) to have hot-swap capability | <ul style="list-style-type: none"> ■ Fail-safe system design for business continuity and error avoidance |
| <ul style="list-style-type: none"> ■ Up to 19.4 TB in additional disk boxes, up to 32 GB main memory, an integrated tape drive and 9 hot-plug PCI slots for long lifecycle | <ul style="list-style-type: none"> ■ Highest expansion and growth capacities |
| <ul style="list-style-type: none"> ■ Intelligent, easy-to-use system management solutions for business-critical computing which increases productivity. Effective deployment, permanent status monitoring, and extended control even in failure situations, ensure higher reliability | <ul style="list-style-type: none"> ■ Cost efficiency in operation |

PRIMEPOWER 450 7U Technical characteristics

- XA system architecture with up to 4 SPARC64™V processors with 1.65GHz or 1.98 GHz and 3MB level-2 cache on-chip
- Up to 32 GB DDR-SDRAM main memory conditioned to system versions, 4-way
- Up to 9 PCI hot-plug controllers
- High-speed interconnect (crossbar) with 4 processors.
- Redundant hard disks (as option), fans(standard), power supply units (as option) and/or power phases(optional)
- Hot-swap components: hard disks, DAT drive, power supply units, fans and PCI
- Monitoring of operating status of system units in real time on system management console.
- 19-inch rack system units (7HU)
- New eXtended System Control Facility, XSCF, with:
 - Controlling and diagnostics when power is on.
 - Diagnostics when power is off.
 - Power on/off by command.
 - LAN console connection through LAN direct to XSCF LAN port.
 - Serial port (tty-a) for use with a console attached via RCA4.

SPARC64™ V – Processor Functions

- Super-scalar processing
- VIS™ – Visual Instruction Set
- 64-bit virtual address space
- 7 Execution Units (2 Load Store, 2 Fixed Point, 2 Floating Point, 1 Branch)
- Up to 4 instructions can be ended with each CPU-Clock cycle
- SMP – cache coherency support (MOESI-Protokoll)
- 2x128 KB on-chip Level1 low latency cache
- 4 way 16K entries branch history table
- optimized Branch Prediction method
- Concurrent out-of-order execution
- ECC (Error Correction Code) for
 - Level-1 data cache
 - Level-2 cache
 - High speed interconnect
 - Memory
- Parity for
 - CPU register
 - CPU core (data pathes and all ALU's)
 - TLB (Translation Look-aside Buffer)
 - Level-1 instruction cache
- Duplication of tags for level-1 instruction- and data- cache
- Automatic, in hardware implemented instruction recovery in case sporadic one-bit error of the CPU-core (AIR = Automatic Instruction Retry)
- Automatic degradation of parts of individual CPU subcomponents (ways) of level-1, level-2cache and TLB in the event of sporadic single-bit errors during operation
- Instruction TLB:
 - 1024 entry, 2 way, 8KB pages
 - + 1024 entry, 2 way, 4MB pages
 - + 32 entry, full associative 64KB, 512KB and locked page
- Data TLB:
 - 1024 entry, 2 way, 8KB pages
 - + 1024 entry, 2 way, 4MB pages
 - + 32 entry, full associative 64KB, 512KB and locked page
- 3 MB 3-way joint low latency on-chip level-2 Cache
- 400 Mio. Transistors, 90nm copper technology

Technical specifications PRIMEPOWER 450 7U

| | | |
|--------|-------------------------------------|-------------------------------------|
| Server | GP450-GR5xEy (with 1,65GHz/3MB SLC) | GP450-GR5xFy (with 1,98GHz/3MB SLC) |
|--------|-------------------------------------|-------------------------------------|

Processor

| | | |
|----------------------|------------------------------------|----------|
| Type | SPARC64™V (equivalent to SPARC V9) | |
| CPUs | 1-4 per Server | |
| Level-1 Cache, (I/D) | 128KB / 128KB | |
| Level-2 Cache | 3MB / CPU | |
| Clock Speed | 1,65 GHz | 1,98 GHz |
| SPECint_rate2000 | 55,4 | 64,6 |
| SPECfp_rate2000 | 72,7 | 79,9 |

Main memory configuration

| | | |
|----------------|---|--|
| Type | Synchronous DDR SDRAM with ECC (even single-chip failure will be corrected) | |
| min. capacity | 1 GB / server | |
| max. capacity | 32 GB / server | |
| Expansion unit | 1 GB or 2 GB or 4 GB | |

I/O ports (Standard)

| | | |
|---------------------------|--|--|
| LAN | 1 x Ethernet (10baseT / 100baseTX) 1 x Ethernet (10baseT / 100baseTX / 1000base TX) | |
| V.24 (RS232C) | 1 x | |
| console port | 1 x RS232C (on XSCF) 1 x Ethernet (10baseT / 100baseTX on XSCF) | |
| SCSI bus (for int. disks) | 2 per Server (LVD U320) | |
| RCI | 1 port (RJ45 6-pin) | |
| UPS | 1 port / Server (D-sub 9-pin) | |

PCI slots

| | |
|--------------|---------------------------------|
| PCI (64 bit) | 9 slots (7x33 MHz, 2x33/66 MHz) |
|--------------|---------------------------------|

PCI-controller

| | |
|--------------------|---|
| Ultra Dual SCSI | Ultra SCSI, 16 bit, D, 2 channels |
| LVD U320 Dual SCSI | U320 SCSI, 16bit, 2 channels |
| Fibre Channel | 2 Gbit/s, Non-OFC |
| Fast Ethernet | 10base-T/100base-TX, 1 or 4 channels |
| Gigabit Ethernet | 1000 base-SX, 1 channel |
| Gigabit Ethernet | 10baseT/100baseTX/1000 base-TX, 1 channel |
| Token Ring | 100 / 16 / 4 Mbit/s |
| WAN | V.24, X.21, V.35, 2 Mbps |
| ISDN | S ₀ , S _{2m} |

Mass storage (hard disks)

| | |
|----------------|---|
| Type | LVD U320 |
| Data rate | 320 MB/s (sync, max) |
| Min. capacity | 73 GB (U320) ¹⁾ |
| Expansion unit | 73 GB / 147 GB (U320) ¹⁾ |
| Total capacity | 882 GB (internal) / 19.4 TB (incl. 9 DN4x disk boxes) ¹⁾ |

DN4x disk box 3HU (1 per PCI adapter)

| | |
|----------------|-------------------|
| Hard disk bays | 14 bays (2 x 7) |
|----------------|-------------------|

BG57 peripheral box 3HU

| | |
|-----------------|--|
| Peripheral bays | 4 bays (1,6" high) 1 to 4 SCSI strings |
|-----------------|--|

Console

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|-------------|--|
| LAN-Console | 1 x per server / mandatory in a network or a SMC from an Enterprise system |
|-------------|--|

Software

| | |
|--------------------|--|
| Operating system | Solaris™ 8 02/02, 9 und 10 |
| Networking | ONC/NFS, TCP/IP, OSI, X.25 |
| Compiler | C/C++, Fortran-90, COBOL, Java |
| System management | PRIMEPOWER ServerView Suite |
| Storage management | VERITAS Volume Manager & File System, PRIMECLUSTER |

¹⁾ 1 MB = 10⁶ Byte, 1 GB = 10⁹ Byte

Installation specifications PRIMEPOWER 450 7U

| | | PW450 7HU rack version Up to 4-way |
|---|-----------|---|
| Width | | 445 mm |
| Depth | | 690 mm (737 mm over all) |
| Height | | 307 mm |
| Maintenance area | | Maintenance area is specified in rack description |
| Weight | | 60 kg *1) |
| Rated voltage | | 200-240 VAC +/-10% |
| Mains connections | | max. 3 x IEC320-C14 |
| Frequency | | 50/60Hz +2%/-4% |
| Power consumption, max. | | 1350VA (1280 Watt) |
| Heat output, max. | | 4608 kJ/h |
| Operating temperature / Operating altitude | | from 5 to 35 ° C / 0 – 1.500 m from 5 to 31° C / 1.501 – 3.000 m |
| Relative humidity | | 20 % - 80 %, no condensation |
| Electrical standards: | Safety | IEC60950 ; C22.2 No.60950 ; ICES003 (CSA 108.8) ; UL60950 |
| | EMC | EN55022 / CISPR22 Class B ; EN61000-3-2 / EN61000-3-3 |
| | Immunity | EN55024 / CISPR24 |
| Environmental conditions: | Operation | EN60721-3-3, 3K2, 3M2, 3C2, 3S2 |
| | Storage | EN60721-3-1, 1K2, 1M3, 1C2, 1S2 |
| | Transport | EN60721-3-2, 2K2, 2M2, 2C2, 2S1 |
| Ecology | | ECO ; FSC 03230 |

*1) without the necessary mounting rails and supports