

## PRIMEPOWER 850

### 16-way Compute Node – Highly scale-up performance for your individual datacenter needs

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 850

The PRIMEPOWER 850 is the foundation for enterprises, service providers and e-market datacenter, which are looking for highly scaling, linear performance growth and yet need the flexibility to compose their own server for optimum cost and functionality. PRIMEPOWER 850 ensures 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, which work together to reduce the susceptibility to your critical business applications. Up to 16 SPARC64™ V processors and up to 128 GB of memory together with the company's innovative high throughput system crossbar provide massive linear scaling performance to handle any workload. Designed as a 16 U compute node the server provides a splendid flexibility of use. It can work as a central, raw power compute engine with integrated corporate storage networks, which masters central transactional workloads. The server can easily be expanded with optional I/O - disk boxes to constitute a fully fledged central production server for larger corporations. This server exactly covers your individual needs and assures optimal resource utilization as your organisation continues to grow.



Key Features	Benefits
<ul style="list-style-type: none"> <li>■ Latest generation SPARC64 V Processor with 2.16 GHz and integrated 4 MB 2nd level cache</li> </ul>	<ul style="list-style-type: none"> <li>■ Highest performance for Solaris-based Applications</li> <li>■ Less CPUs needed for your application workload</li> <li>■ Save on software- per CPU- licenses</li> </ul>
<ul style="list-style-type: none"> <li>■ Unique SPARC64 V RISC processor with “selfhealing” features (Automatic Instruction Retry) and enhanced reliability, availability and serviceability functions(ECC data protection and Cache Degradation)</li> </ul>	<ul style="list-style-type: none"> <li>■ No panic in case of failure because of automatic retry of failed instructions</li> <li>■ Enhanced quality of production and reduced total cost of ownership</li> </ul>
<ul style="list-style-type: none"> <li>■ The server provides up to 16 processors in a high-performance and scalable configuration. Additional performance can be gained by simply increasing the number of main memory, PCI slots and storage capacities.</li> </ul>	<ul style="list-style-type: none"> <li>■ Cost efficiency: Flexible and individual system configuration for optimal usage</li> </ul>

# PRIMEPOWER 850 Technical characteristics

- For system version with 1.89GHz or 2.16GHz processor:
  - Enhanced XA processor architecture, implemented in the leading 90 nm semiconductor copper technology
  - XA system architecture with up to 16 SPARC64™V processors with 1.89 GHz and 3MB- Level 2 -Cache on-chip or 2.16 GHz and 4MB- Level 2 -Cache on-chip
- 16 PCI-slots in system, further 24 PCI-slots can be configured over additional PCI/Disk boxes
- Up to 128 GB main memory
- High-speed interconnect (crossbar) with large bus transfer rate of 34.6 GB/s.
- Dual Power Feed Option
- Redundant components: hard disks (as option), fans(standard), power supply units (as option) and power phases(optional)
- Hot-swap components: hard disks, DAT drive, power supply units and fans
- Automatic restart in the event of an error (ASR = Automatic System Reconfiguration) after reconfiguring of fault components
- System Control Facility (SCF) for diagnosis and monitoring of the operating status

## SPARC64 TM V – processor features (1.89 GHz and 2.16 GHz)

- 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-Protocol)
- 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

### Functions only for 1.89GHz Processor

- 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

### Functions only for 2.16GHz Processor

- 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
- 4 MB 4-way joint low latency on-chip level-2 Cache
- 400 Mio. Transistors, 90nm copper technology

# Technical specifications PRIMEPOWER 850

Server	GP850-GM6xDy /-GM6xEy (1.89GHz/3MB SLC)	GP850-GM6xGy (2.16GHz/4MB SLC)
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## Processor

Type	SPARC64™V (equivalent to SPARC V9)	
CPUs	4-16 per Server	
Level-1 Cache, (I/D)	128KB / 128KB	
Level-2 Cache	3MB / CPU	4MB / CPU
Clock Speed	1.89 GHz	2.16 GHz
SPECint2000	1,345	---
SPECfp2000	1,803	---
SPECint_rate2000	233	283
SPECfp_rate2000	252	312

## Main memory configuration

Type	Synchronous DDR SDRAM with ECC (even single-chip failure will be corrected)
min. capacity	4 GB / server
max. capacity	128 GB / server
Expansion unit	4 GB or 8 GB

## I/O ports (Standard)

LAN	1 port (100Base-TX or 10BaseT)
Serial	2 ports RS232C Console/Teleservice (D-sub 25-pin) with 9pin adapter
Keyboard/Mouse	1 port (DIN 8-pin)
RCI	1 port (RJ45 6-pin)
UPS	1 port / Server (D-sub 9-pin)

## PCI slots in maximum case

PCI (64 bit) in total	40 slots (30x 33 MHz, 10x 33/66 MHz)	
1-2 Internal PCI Box	33/66 MHz	2 slots (2 Busses with 1 slot each)
	33 MHz	6 slots (2 Busses with 3 slot's each)
	In total	8 slots (1 long, 7 short)
0-2 Extension PCI Box	33/66 MHz	3 slots (3 Busses with 1 slot each)
	33 MHz	9 slots (3 Busses with 3 slot's each)
	In total	12 slots (4 long, 8 short)

## PCI-controller

Ultra Dual SCSI	Ultra SCSI, 8bit/16bit, D, 2 channel
Ultra SCSI LVD320	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
Serial Controller	2port, 8port
ATM 155/M	155Mbps via Multi Mode Fibre
Token Ring	100 / 16 / 4 Mbit/s
WAN	V.24, X.21, V.35, 2 Mbps
ISDN	S <sub>0</sub> , S <sub>2m</sub>

## Mass storage (internal hard disks)

Type	Ultra SCSI Wide/SE
Data rate	40 MB/s (sync, max.)
Min. capacity	73 GB (U320) <sup>1)</sup>
Expansion unit	73 GB / 147 GB (U320) <sup>1)</sup>
Total capacity	588 GB (U320) <sup>1)</sup>

## Console

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

<sup>1)</sup> 1 MB = 10<sup>6</sup> Byte, 1 GB = 10<sup>9</sup> Byte

## Installation specifications PRIMEPOWER 850

	<b>PW850 16HU rack</b> Up to 16-way	<b>Extension PCI Box 4HU rack version</b> 12-PCI slots
Width	440 mm	440 mm
Depth	780 mm	670 mm
Height	708 mm	174 mm
Maintenance area	Maintenance area is specified in rack description	Maintenance area is specified in rack description
Weight	160 kg *1)	33 kg *1)
Rated voltage	200-240 VAC +/-10%	
Mains connections	max. 3 x IEC320-C14 plus 3 x IEC320-C14 for DPF	max. 2 x IEC320-C14
Frequency	50/60Hz +2%/-4%	
Power consumption, max.	3,900 VA (3,850 Watt)	375 VA (350 Watt)
Heat output, max.	13,860 kJ/h	1,260 kJ/h
Operating temperature / Operating altitude	from 5 to 35 °C / 0 – 1,500 m from 5 to 33 °C / 1,500 – 2,000 m from 5 to 32 °C / 2,000 – 2,500 m from 5 to 30 °C / 2,500 – 3,000 m	from 5 to 35 °C / 0 – 1,500 m from 5 to 33 °C / 1,500 – 2,000 m from 5 to 32 °C / 2,000 – 2,500 m from 5 to 30 °C / 2,500 – 3,000 m
Relative humidity	20% - 80%, no condensation	
Electrical standards:	Safety	IEC60950 ; C22.2 No.60950 ; ICES003 (CSA 108.8) ; UL60950 ; EN60950
	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