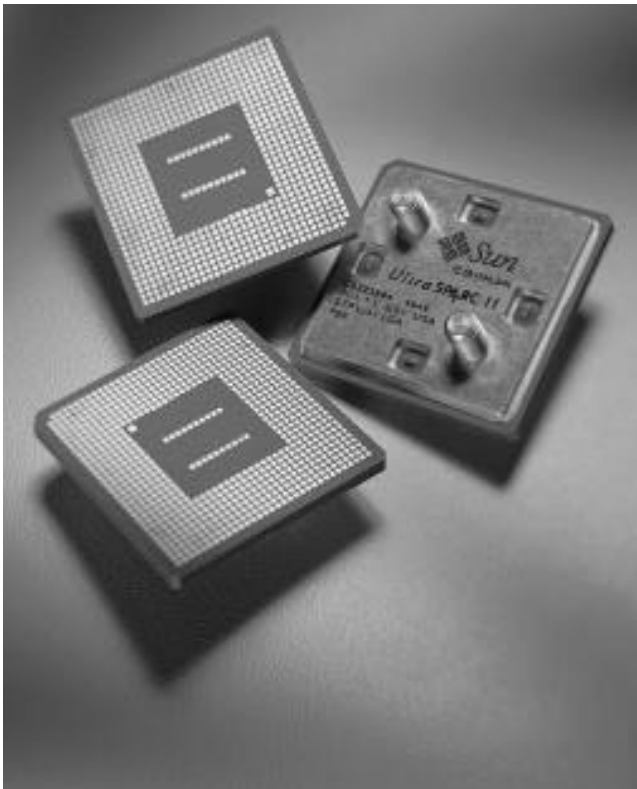


# UltraSPARC™ II Microprocessor

## High-Performance, Highly-Scalable, Multiprocessing, 64-bit SPARC™ V9 RISC Microprocessor



The state-of-the-art UltraSPARC™II processor is the second generation in the UltraSPARC *s*-series microprocessor family. A complete implementation of the SPARC™ V9 architecture, the UltraSPARC II processor is binary compatible with all previous versions of SPARC processors, resulting in an increased return on your investment. Designed for scalability from mainstream workstations at the low end up to supercomputing servers at the high end, the UltraSPARC II processor delivers high performance and reliability. Meeting and exceeding the demands of today's compute-intensive, network-centric, multimedia-rich applications, the UltraSPARC II processor implements innovative technologies that help lower the end user's total cost of ownership.

The UltraSPARC II processor microarchitecture is designed to provide up to 4-way glueless multiprocessing support and supports up to 64-way systems. The processor supports multiple L2 cache speeds and sizes to enable high-performance multiprocessing systems.

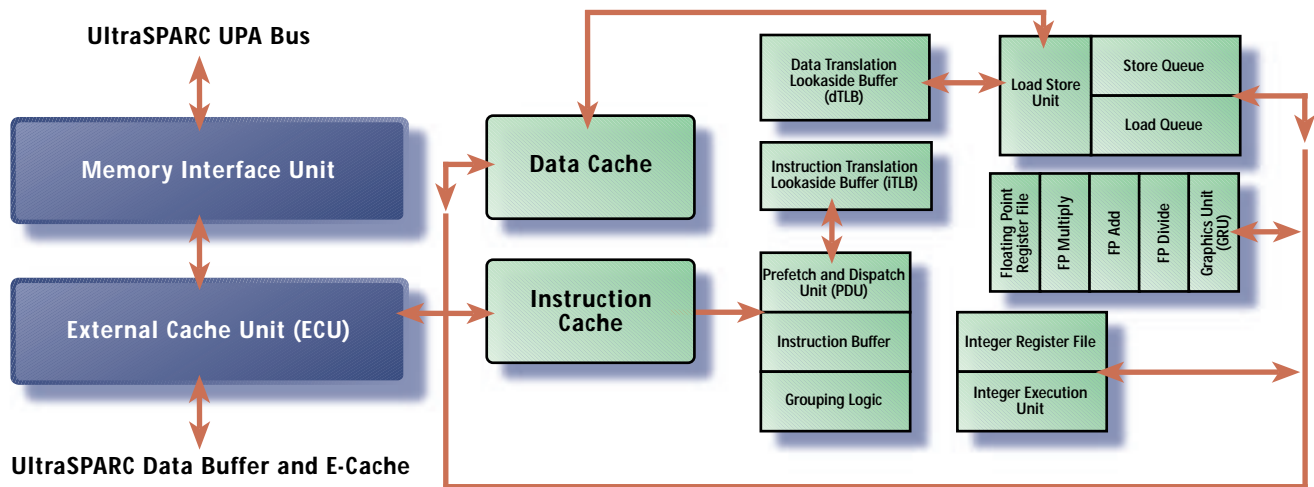
Balanced overall system performance requires optimal performance along *three* critical levels: memory bandwidth, media processing, and raw compute performance. A highly-scalable, high-performance system interconnect ensures a bottleneck-free computing environment resulting in high memory bandwidth. VIS™ (Visual Instruction Set) multimedia extensions boost the performance of graphics-intensive multimedia applications, and thus reduce overall system costs by eliminating the need for a special-purpose media processor. And the UltraSPARC II delivers superior raw compute performance by using the most innovative RISC microprocessor architecture and state-of-the-art process technology.

The UltraSPARC II processor not only helps the system designer by implementing industry-standard testing and instrumentation interfaces, it also uses Error Checking & Correction (ECC) and parity to increase system reliability. With high performance, high scalability, and high reliability, the UltraSPARC II is the processor of choice for today's workstations and servers.

### FEATURES

- Full 64-bit implementation of SPARC V9 architecture
- 100% binary compatibility with previous versions of SPARC systems
- Built-in MP support (glueless 4-way and up to 64-way)
- High-performance UPA system interconnect
- Performance Scalability (frequency range: 250-480MHz; L2 cache support: 256KB-16MB)
- VIS multimedia accelerating instructions
- Block load and store instructions
- Multiple SRAM modes (variable speed L2 cache)
- JTAG boundary scan and performance instrumentation
- Error Checking & Correction (ECC) and Parity
- State-of-the-art 0.25 micron technology and packaging
- Superscalar/Superpipelined high-performance micro-architecture

# UltraSPARC II Microprocessor Architecture



## UltraSPARC II Microprocessor Specifications

<b>Transistors:</b>	5.4M
<b>Process technology:</b>	0.25 micron, 5 metal layers
<b>Die size:</b>	126 mm sq.
<b>Frequency range:</b>	250-480MHz
<b>Core voltage:</b>	1.9V
<b>Power dissipation:</b>	21W @ 400MHz
<b>On-chip instruction cache:</b>	16KB
<b>On-chip data cache:</b>	16KB
<b>L2 cache size:</b>	256KB-16MB
<b>SRAM clocking ratios:</b>	1-1-1, 2-2
<b>Max. Bandwidth to L2 cache:</b>	5333MB/sec
<b>CPU to system clocking ratios:</b>	2:1, 3:1, 4:1
<b>Max. bandwidth to memory:</b>	1.92GB/sec @ 120MHz UPA
<b>Outstanding memory requests:</b>	3 loads, 2 stores
<b>Software data prefetch:</b>	yes
<b>Integer execution units:</b>	4
<b>Floating-point execution units:</b>	3
<b>Graphics execution unit:</b>	1
<b>System Performance (est):</b>	19.6 (SPECint95) and 27.1 (SPECfp95) @ 450MHz
<b>System I/O voltage:</b>	3.3V



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