The Future of the Pentium® II Processor Family

Intel is expanding the Pentium® II processor family to bring its power and scalability to all segments of the computing market – from high-end servers and workstations to desktop and mobile computers.

The Pentium II Processor Family: providing every customer a Pentium II processor-based solution optimized for the applications of their market segment.

New Additions to the Pentium® II Processor Family

Pentium II processors introduced in 1998 will be the first members of the Pentium II processor family to be based on the "Deschutes" core (0.25-micron technology). As with current Pentium II processors they will feature Intel's Dual Independent Bus (D.I.B.) architecture, Dynamic Execution and Intel MMX™ technology.

These new products will extend Intel's leadership in desktop PCs and broaden today's Pentium II processor family offerings up to high-end servers, workstations, as well as to Basic PCs and to notebooks, so Intel can deliver the highest possible performance on all three vectors of performance, to all market segments.

With the Pentium II family of processors, Intel is using the same base technology to develop a range of products that meet the specific performance and platform needs of different market segments: Pentium II processor family members for Slot 2 targeted towards mid-range to high-end servers and workstations; Pentium II processor products for Slot 1 targeted towards the Performance Desktop and Basic PC for both business and home use as well as low to mid-range servers and workstations; and Pentium II processors in Mobile Cartridge or Mobile Module form factors for Mobile PCs.

Pentium® II processor for all segments in 1998

MARKET SEGMENT	1997:	1998:
High end Server or Workstation: **Low end Server or Workstation:**	**Pentium® Pro Processor** →	**Pentium® II Processor family member in Slot 2**
Performance Desktop PC:	**Pentium® II Processor** →	**Pentium® II Processor family member in Slot 1**
Basic Desktop PC:	**Pentium® Processor with MMX™ Technology** →	**Pentium® II Processor family member based on Slot 1 form factor**
Mobile PC:	**Pentium® Processor with MMX™ Technology** →	**Pentium® II Processor family member in cartridge or mobile module**

Targeted Products, Unique Segments
Introduced January 26, 1998, the first new Pentium II processors for Slot 1 feature a 333 MHz processor with a 66 MHz system bus. Upcoming Pentium II processors for Slot 1 running at 350 and 400 MHz with a 100 MHz system bus for desktops and entry-level servers and workstations will also be announced in the first half of 1998. Pentium II processors for Slot 1 with a 450 MHz operating frequency on a 100 MHz system bus are expected by the end of the year. All Pentium II processors for Slot 1 are capable of 1- and 2-way processing. Pentium II processors for Slot 1 continue Intel's market leadership with the highest performing Intel Architecture products for the desktop and entry-level server and workstation market segments.

For the Basic PC market segment (PCs priced at under $1000), the Pentium II processor family includes a version with no L2 cache, a 66MHz system bus and operating frequencies of at least 266MHz. These processors are expected to launch in mid-1998, and are based on the Slot 1 form factor. Versions of the Basic PC that incorporate up to a 256K L2 cache resident on the processor (also referred to as "on-die") will be available in the second half of 1998.

The new Pentium II processors for mid-range to high-end servers and workstations are designed with larger L2 cache sizes, a full-speed L2 cache bus, and increased cacheable address space. Scheduled for introduction in mid-1998, these first Pentium II processor family members for Slot 2 will offer a clock speed of 400 MHz and a 100 MHz system bus. A future Pentium II processor for Slot 2 will also be available at 450MHz by the end of the year.L2 cache sizes will start at 512KB and are planned for up to 2MB. Pentium II processors for Slot 2 will offer glueless support for up to four-way multiprocessing. The Pentium II processor design is optimal for mid-range to high-end servers and workstations, from multiprocessing servers used to run a business to networked workstations for complex calculations and digital content creation (DCC).

Notebook PCs will benefit from the proven Pentium II processor architecture for the first time when Intel introduces the Pentium II processor technology to mobile computers in the first half of 1998. These mobile processors will offer all of the architecture features of today's Pentium II processor for desktop systems -- Dynamic Execution, D.I.B. architecture, a closely coupled L2 cache and Intel MMX technology. The Pentium II processor for mobile PCs will come in both Mobile module and Mobile cartridge form factors. The power consumption of the new Pentium II processors for mobile is comparable to today's mobile Pentium processor with MMX technology.

Intel Pentium® II Processors:
Here today, and the best solution across all market segments for tomorrow
As Intel's premiere processor family, today's Pentium II processors offer the best solutions for demanding business and home desktop applications as well as entry-level servers and workstations with the high performance generated by Dynamic Execution, the increased bus bandwidth created by the D.I.B. architecture design, plus Intel's MMX technology. In the future, the Pentium II processor family will provide unique processors for every market segment.

Frequently Asked Questions

Background

1. **What do the terms "Slot 1" & "Slot 2" refer to?**
   The "slot" of Slot 1 & Slot 2 refers to the slot (or connector) resident on the motherboard into which the Pentium II processor fits.

2. **Why did Intel move from socket 7 to a slot form-factor?**
   Intel recognized some time ago that the Pentium processor bus architecture with the socket 7 interface was running out of bus bandwidth for future platform advances. The D.I.B. (Dual Independent Bus) architecture with its closely coupled L2 cache bus has enabled us to increase the overall bandwidth available to the CPU.

   By changing to this new technology, we can continue to address the needs of our customers by delivering very fast performance in the large volumes required by the mainstream desktop market segment. In addition, the cartridge design also gives us more flexibility to design different processors to meet the needs of different market segments.

3. **Does the Pentium® II processor for Slot 2 replace the Pentium II processor for Slot 1?**
   Slot 2 does not replace Slot 1. Future Pentium II processor family members for Slot 2 will be targeted at the mid-range to high-end server and workstation market segments, offering larger, full-speed L2 caches and 4-way multiprocessor support. These features are meant to address the specific needs of those high-end market segments. Pentium II processors for Slot 1 will continue to be the processor used in the business and home desktop market segments, as well as for entry-level servers and workstations (single and dual processor systems).

4. **What does "Deschutes" mean?**
   Deschutes is the internal code name for future Pentium II processors using the 0.25 micron process technology. The name was taken from a river in Oregon, near an Intel site that contributed to the design of this next-generation processor.

5. **Where do I go for more information about the next generation of Pentium® II processors?**
   As more information becomes available, it will appear at this web site.

6. **Why is Intel disclosing this information prior to the launch?**
   This information is provided on the web to clarify what has been made public to-date.

7. **Should I postpone my purchase of a new PC?**
   Users should purchase PCs based on their computing needs. At any given point in time there are a number of performance and value solutions available.

Technical

8. **What are the operating frequencies of the new Pentium® II processors for 1998?**
   - Pentium II processor operating frequencies of 233, 266, 300, 333 MHz are currently available and shipping for Slot 1.
   - New Pentium II processors with operating frequencies of 350 and 400 MHz on a 100 MHz system bus are expected in the first half of 1998. These processors are designed for the Slot 1 form factor. A Slot 1 version running at 450 MHz on a 100 MHz system bus is expected by the end of 1998.
   - New Pentium II processors with no L2 cache (for the Basic PC market segment) are expected in mid-1998. Operating frequencies for this part are not yet disclosed.
   - Pentium II processor family members for Slot 2 with an operating frequency of 400 MHz with a 100MHz system bus are expected in mid-1998. The Slot 2 operating frequency is expected to reach 450 MHz on a 100 MHz system bus by the end of 1998.
   - Mobile operating frequencies are expected to be 233, 266, 300 MHz in 1998. The first mobile Pentium II processors are expected to be available in the first half of 1998.

9. **What are the System Bus Speeds for the Pentium® II processor?**
   - Current Pentium II processors for Slot 1 have system bus speeds of 66 MHz.
   - Future Pentium II processors for Slot 1 will have system bus speeds of either 66 MHz or 100 MHz
   - Future Pentium II processors for Slot 2 will have a system bus speed of 100 MHz

10. **What are the L2 cache speeds for Pentium® II processors for Slot 1, Pentium II processors for Slot 2, and Mobile?**
    Scalable L2 cache speed:
    - Pentium II processors for Slot 1: ½ speed of processor core (same as current Pentium II processors for Slot 1)
    - Pentium II processors for Slot 1, on-die L2 cache: not disclosed yet
    - Pentium II processors for Slot 2: same speed as processor core (full speed)
    - Mobile: not disclosed yet

11. **What are the L2 cache sizes of the various future Pentium® II processors?**
    - Pentium II processors for Slot 1 Performance Desktop PC, entry-level server & workstation: 512 KB
    - Pentium II processors for Slot 1 Basic PC: 0 KB L2 cache at first introduction in mid-1998, later on-die versions up to 256 KB by the end of 1998
    - Pentium II processors for Slot 2: 512 KB, 1MB, 2 MB
    - Mobile: up to 512 KB

12. **Does the next generation of Pentium® II processors have MMX™ technology?**
    Yes.

Introduction
13. **When will the parts be introduced?**
    - Pentium II processors for Slot 1:
      - 333 MHz, 66MHz bus: January 26, 1998
      - 100 MHz system bus and Mobile: 1st half of 1998
    - Pentium II processors for Slot 1: Basic PC (no L2 cache): mid 1998
    - Pentium II processors for Slot 2: mid 1998
    - Pentium II processors for Slot 1, on-die L2 cache: 2nd Half of 1998

14. **What is the performance of these processors?**

Detailed performance data will be available when the processors are introduced and will be found at:
http://www.intel.com/procs/perf/PentiumII/index.htm

15. What are the CPU prices?
Intel discloses pricing at the time of product launch.

16. What will the system prices be?
System prices are determined by PC manufacturers'. We can not comment on behalf of system manufacturers' plans.

17. Which OEMs will have systems?
The majority of system OEMs who currently offer platforms based on the Pentium II and/or Pentium Pro processors will offer systems based on future Pentium II processors. For example, please see this partial list of OEMs who offer systems based on the current Pentium II processors.
http://www.intel.com/PentiumII/systems/index.htm

18. Will Pentium® II processors for Slot 2 be available in desktop systems?
Pentium II processors for Slot 2 are targeted at the mid-range to high-end server and workstation market segments, offering larger, full-speed L2 caches and 4-way multiprocessing support. They will have a form factor and feature set that make it unlikely they will be included in a traditional desktop design.

However, OEMs are responsible for the design of their machines; therefore, whether or not there is a Pentium II processor for Slot 2 available in desktop systems is ultimately up to them.

19. When will future Pentium® II processors support a 100 MHz system bus?
The Pentium II processors for Slot 1 at 350, 400 MHz which are based on a 100 MHz system bus, will be announced in the first half of 1998. Pentium II processors for Slot 2, which all employ a 100 MHz system bus, will be announced in mid-1998.

20. Does the introduction of new Pentium® II processors mean that the Pentium® Pro processor is discontinued?
No. The Pentium Pro processor continues to be the leader for Intel based 4-way and beyond server systems through the 1H'98. The 1 MB L2 cache version continues to allow server OEMs to deliver industry leading $/tpmC results for 4-way and beyond configurations. When the future Pentium II processors are introduced the Pentium Pro processor will be offered for as long as there is sufficient market demand.

21. Does the introduction of new Pentium® II processors mean that the Pentium® processor with MMX™ technology is being discontinued?
No. Intel is still manufacturing the Pentium processor with MMX™ technology for entry-level systems and will continue for as long as there is sufficient market demand.

Upgrades
22. Can I upgrade my Socket 7 system to a Pentium® II processor for Slot 1 or Slot 2 ?
Pentium II processors for Slot 1 and Slot 2 are not compatible with Socket 7 systems.

23. Can I upgrade my Pentium® II processor for Slot 1 system to a Pentium II processor for Slot 2?

Slot 2 processors which are designed for the high-end of the server and workstation market segments are not compatible with Slot 1 systems.

24. Can I upgrade my current Pentium® II processor for Slot 1 to future Pentium II processors for Slot 1?
Confer with your system OEM to confirm your system's compatibility. Future Pentium II processors for Slot 1 are designed to be compatible with systems with previous Pentium II processors at identical system bus frequencies.

Support
22. What chipsets and motherboards will support future Pentium® II processors?
Details will be made available when the parts are introduced

23. Will there be chipsets and motherboards for future Pentium® II processors that support AGP?
The chipsets available from Intel for the new Pentium II processors for Slot 1 will all support AGP

Mobile
27. What will be the form factor of the future mobile Pentium® II processors?
The mobile Deschutes will come in a Mobile cartridge as well as a Mobile module. The cartridge is the mobile equivalent of the SECC (Single Edge Contact Cartridge) for Slot 1. The Mobile module form factor is designed to be socket compatible with previous modules.

28. What is the power consumption of these new processors for mobile?
Power consumption is under 8 watts and is comparable to the previous generation of mobile Pentium processors with MMX technology built on the 0.35 micron manufacturing process.

29. Will mobile Pentium® II processor notebooks have AGP? Does the mobile module support AGP?
We expect to see broad deployment of AGP in 2H'98. The connector on this Mobile module does not support AGP.

* Legal Information © 1998 Intel Corporation