Intel's Core i7 processor

 Alex Byars 3 posts since

Jul 2, 2008

Can you provide more information on the Core i7 processor? For example, what performance benefits will Intel VT features such as Virtual Processor Identifiers (VPID) have on a system that is hosting VMware?

Tags: intel, vt_technology, multicore

 Hank Lea *18 posts since*

Sep 2, 2008 1. **Re: Intel's Core i7 processor** Feb 11, 2009 10:50 AM

Hi Alex,

Thanks for your questions. Could you provide any addtional details on your applications and system configurations?

Thanks, Hank

 Lars Troen *6 posts since*

Sep 10, 2007 2. **Re: Intel's Core i7 processor** Feb 12, 2009 12:56 PM

VMware ESX doesn't really have any special support for the i7 cpu yet, but will still take advantage of the improved performance of the cpu. Right now, only the hosted products support EPT.

Lars


raghu *1 posts since*
Sep 10, 2007 3. **Re: Intel's Core i7 processor** Feb 12, 2009 3:22 PM

Alex ,

VMware software currently doesn't support the new Intel VT features like VPID that are part of Core i7. You should check with VMWare on the availability of that support.

Here is some info on what VPID is (which is a feature of Intel's VT capability, which includes other features like EPT)

In a virtualized environment, VM transitions happen frequently; mostly between the host and a guest OS, but also between guest OS's. when you have a VM transition (e.g. the host transfers control to a guest) all TLB entries are invalidated, or flushed. The guest then starts with an empty TLB, and the CPU adds TLB entries as each new page translation occurs. When the page translation is not present in the TLB (e.g. TLB miss) the processor must go to the page tables (Data caches or main memory) to translate the virtual address into a physical address, thus slowing down the application. Subsequent translations for that page are done quickly by the TLB.

With VPID, Virtual Process ID each TLB entry is "tagged" with an identifier. Having such a tag allows the TLB entries to not be "flushed" when switching between the host and a guest. Instead, when the "host" is running and an address is presented to the TLB, the tag is also presented and the TLB simply looks for TLB entries with the "host" tag ignoring the TLB entries which have a "guest" tag.

Having a Tagged TLB speeds up the virtual to host physical address translation because the TLB entries remain in the TLB after a VM transition (e.g. host to guest or guest to guest switch) and thus the TLB doesn't have to be flushed each time you switch between the host and a guest.

We estimate the performance improvement (reduction in virtualization overhead) with VPID to be anywhere between 3-5%.

Daniel Eason *9 posts since*
Sep 10, 2007 4. **Re: Intel's Core i7 processor** Feb 27, 2009 2:07 PM

in response to: raghu

Raghu,

Great descriptive and breakdown thank you.

Tell me in regards into your statement on 3-5% increase in performance I was told on your Intel Sales booth that i'd get upto 40% and also when asking if Nehalem is 8 Core was also told yes to then find in one of Intels presentations the CPU is Quad core with good old Hyperthreading?

Lastly is 3-5% increased performance really worth waiting and paying more for a standard chipset available today? Or is this increase going to improve with application/os/esx developments?