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The long wait for a 64-bit version of Android on smartphones is coming to a close, with Intel on Monday showing a version of the OS running on a handset. The OS was shown running on a smartphone with Intel's new dual-core smartphone chip code-named Merrifield during a press conference at Mobile World Congress in Barcelona. Intel had already shown tablets running an unfinished version of 64-bit Android with its Atom chip code-named Bay Trail. The smartphone was shown on stage by Hermann Eul, vice president and general manager of Intel's Mobile and Communications Group. The demonstration was short, with Eul taking a smartphone from his pocket and swiping through a few screens of the Android interface. "We have on Merrifield our 64-bit Android kernel running," Eul said. "We prepare the world and the ecosystem for advances and we push the 64-bit adoption in mobile." Intel said in January that it had completed work on the 64-bit Android kernel. Intel has been working on integrating 64-bit for use in Android 4.4, code-named KitKat. However, no smartphones with 64-bit Android have been announced. Intel expects new smartphones with Merrifield to be announced by the end of the second quarter. Intel announced long-term partnerships Monday with device makers Lenovo and Asus, though it wasn't clear if those companies will release 64-bit Android handsets. There will be improvements in video performance, compression, decoding and other intensive computing tasks with a 64-bit chip and compatible OS, said Julie Coppernoll, marketing director in Intel's Mobile and Communications Group. Mobile devices will also be able to pack more than 4GB of memory, which could provide performance improvements. Intel's demonstration also paves the way for more device makers to bring the 64-bit OS to smartphones. Intel accelerated the code contributions to complete the 64-bit Android kernel for its x86 chips, while development is still underway for 64-bit ARM chips. The mobile device market is ruled by ARM, whose processor designs are used in most smartphones and tablets. At MWC, Qualcomm announced a new 64-bit Snapdragon 615 chipset with eight CPU cores, but did not talk about OS support for the chip. The Snapdragon chip will be in high-end mobile devices during the fourth quarter. More chip makers are expected to come out with 64-bit ARM chips in the coming months. Intel hopes the 64-bit OS support will give its x86 mobile chips an advantage over competitors in the ARM camp. However, Apple is still ahead in the 64-bit smartphone OS race with iOS on the iPhone 5s, which has a 64-bit A7 chip. "Nobody expected the transition to come this quickly. Apple accelerated everyone's schedule," said Jim McGregor, principal analyst at Tirias Research. Google provides the baseline for Android and is working with a lot of partners on OS optimization for chips and handsets. On the other hand, Intel's doing a lot of the Android work itself, which allowed it to put in extra work and get ahead of its rivals, McGregor said. "It's just a matter of where the schedule fits. Nobody expected the need to have it today," McGregor said. The recent release of Chrome 89 brought with it one super-useful upgrade for a number of Android users: an official 64-bit version of the browser, which Google claims is "up to 8.5% faster to load pages and 28% smoother when it comes to scrolling and input latency." Before you get too excited, however, know that there are a few hoops you'll have to jump through in order to benefit from this beefier browser. First, you need to be running Chrome 89, so make sure you've taken a trip to the Google Play Store and updated your browser (and other apps, while you're there). Second, your device needs to be running Android 10, at minimum. If you're not sure whether that's the case, visit your Settings app's System Update section (System > Advanced > System update on my particular Pixel) to see if you have any pending updates. To check the Android version that your device is running, visit your phone's "About" section, likely within its Settings app, and look for something like this: Finally, your Android device will need to have at least 8GB of memory to be able to use the 64-bit Chrome browser. If you forgot how much yours has, look up its specs. You can also enable developer options (by tapping frantically on the "Build number" in the About section of your phone's settings), and then go to System > Advanced > Developer options; you should see your phone's memory listed there. (At least, that's where I found it on my Pixel.) G/O Media may get a commission. Or, if you're lazy like me, you can simply launch Chrome on your Android and type chrome://version in the address bar. Alas, no 64-bit version for me—my Pixel 3a XL is finally showing its age. On my souped-up Galaxy Note 20 Ultra 5G, however, a different story is told: Delightful. Bring on the speed. 64-bit refers to a processor with registers that store 64-bit numbers. A generalization suggests that 64-bit doubles the data a 32-bit CPU can process. 32-bit refers to the number of bits (the smallest unit of information on a machine) that can be processed or transmitted in parallel, or the number of bits used for single element in a data format. The term when used in conjunction with a microprocessor indicates the width of the registers; a special high-speed storage area within the CPU. A 32-bit microprocessor can process data and memory addresses that are represented by 32 bits. In 32-bit desktop systems, you can have up to 4GB of RAM (provided your motherboard that can handle that much RAM) which is split between the applications and the operating system (OS). 64-bit therefore refers to a processor with registers that store 64-bit numbers. A generalization would be to suggest that 64-bit architecture would double the amount of data a CPU can process per clock cycle. Users would note a performance increase because a 64-bit CPU can handle more memory and larger files. One of the most attractive features of 64-bit processors is the amount of memory the system can support. 64-bit architecture will allow systems to address up to 1 terabyte (1000-GB) of memory. Drivers, Software Show Benefits of 64-Bit Unfortunately, most benefits of a 64-bit CPU will go unnoticed without the key components of a 64-bit operating system and 64-bit software and drivers which are able to take advantage of 64-bit processor features. Additionally for the average home computer user, 32-bits is more than adequate computing power. When making the transition from 32-bit to 64-bit desktop PCs, users won't actually see Web browsers and word processing programs run faster. Benefits of 64-bit processors would be seen with more demanding applications such as video encoding, scientific research, searching massive databases; tasks where being able to load massive amounts of data into the system's memory is required. While talk of 64-bit architecture may make one think this is a new technology, 64-bit computing has been used over the past ten years in super computing and database management systems. Many companies and organizations with the need to access huge amounts of data have already made the transition to using 64-bit servers, since a 64-bit server can support a greater number of larger files and could effectively load large enterprise databases to into memory allowing for faster searches and data retrieval. Additionally, using a 64-bit server means organizations can support more simultaneous users on each server potentially removing the need for extra hardware as one 64-bit server could replace the use of several 32-bit servers on a network. It is in scientific and data management industries where the limitations of the 4GB memory of a 32-bit system have been reached and the need for 64-bit processing becomes apparent. Some of the major software developers in the database management systems business, such as Oracle and SQL Server, to name just two, offer 64-bit versions of their database management systems. While 64-bit servers were once used only by those organizations with massive amounts of data and big budgets, we do see in the near future 64-bit enabled systems hitting the mainstream market. It is only a matter of time until 64-bit software and retail OS packages become available thereby making 64-bit computing an attractive solution for business and home computing needs. Based in Nova Scotia, Vangie Beal is has been writing about technology for more than a decade. She is a frequent contributor to EcommerceGuide and managing editor at Webopedia. You can tweet her online @AuroraGG. This article was originally published on October 01, 2004 It's the peak, the top, it's the Mona Lisa. It's the \$64,000 Question: what processor will dominate 64-bit computing? Sixty-four bits holds the promise of new performance, new architectures, new compilers, and a new balance of power in CPU realpolitik. A clean break with the old, a new chance for the new. What hardware or architectural changes are in store for 64 bits? Quite a lot, although few of them have to do with 64-bit-ness, per se. But 64-bit processors are at today's very high end, and they showcase all the best thinking in microprocessor design. This is the cutting edge, where silicon manufacturing, computer architecture, compiler technology, and marketing wizardry all come together. In the words of Calvin and Hobbes, scientific progress goes "Boink!" For most of us waiting breathlessly on the sidelines, the 64-bit battle is between Intel's IA-64 and AMD's Hammer architectures. Separately, we'll evaluate the pros and cons of the "other" 64-bit processors used in workstations and servers, such as SPARC, Power, MIPS, and Alpha. In this first segment of our 64-bit computing series, we'll launch into the wonder that is IA-64. You've probably seen much information already written about Itanium and IA-64 architecture in the past few years, which is mostly a replay of Intel-generated information. We'll try to get beyond the standard facts and hype, and take a critical look at Itanium and IA-64/EPIC, by describing features and delivering some critical analyses. We'll set the stage for an architectural comparison with Hammer and other 64-bit architectures in future segments. To be clear, this 64-bit computing architecture series is not performance testing focused. It's architecture focused, and discusses long-term potentials. We will, however, point you to a few Itanium performance studies on the Web.

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