Delivering Resilient and Reliable Workstations: The Role of ECC Memory

ECC memory plays a critical role in the user experience

Error Correcting Code, or ECC memory, protects your system from potential crashes and changes in data. ECC memory catches and corrects single-bit errors on-the-fly to keep workstation applications running reliably and without error. Single-bit memory errors occur with no fault of the user. They cannot only crash your system and corrupt data but can sometimes change data and go completely undetected. The longer a system operates throughout the day, the greater risk it has for memory errors and this risk increases with the age of the system.

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Today, workstations represent the primary tool used to innovate and create digital assets. Workstations, by mandate, need to be resilient and highly reliable. They are engineered and designed to meet performance targets that deliver a user experience that is unimpeded. ECC memory is one technology that plays a critical role in delivering the desired user experience and it is a critical component to delivering what users expect from professional-grade workstations employed in the creation and modeling of new products that drive a company’s long-term success.

Consider these potential consequences of an undetected error:

• Imagine the impact of losing an hour of a product development session. You now have to re-create and re-imagine your latest innovation.
• Visualize, or fail to visualize, the impact of losing hours of invested time in creating visually rich, engaging content for virtually any media – print, web, interactive, video, audio and mobile.
• Picture your latest product performing incorrectly because of a change in data. Even worse, you may not be aware that it is incorrect.

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10000001001011100001001 = $2,111,970
1000000111001110001001 = $14,818

IT IS UP TO 228 TIMES MORE LIKELY TO SEE ANOTHER CORRECTABLE ERROR IN THE SAME MONTH AFTER EXPERIENCING ONE.

1 in 3 systems have at least 1 correctable memory error a year.¹
Is the investment in more reliable workstation technology worthwhile?

The added investment in reliability delivered from an entry-level Intel® Xeon® processor-based workstation may be as little as $90. The expected life of a workstation is typically three years and the need to accommodate ever-larger models and new workflows should be expected to stress workstation design points within that time frame. Is the investment in more reliable systems worth it? Figure 1 shows the sensitivity of a $90 investment in reliability versus various salaries that range from $40 to $80 an hour. As you see in this figure, in each salary category the investment in reliability outweighs the risk of not making the investment. There is also the chance that an error could change data central to your project without your knowledge. Reliability is an investment worth making.

Figure 1. Investing in a reliable workstation with ECC memory can improve your productivity which can significantly increase the overall return.

To learn more about Intel® Xeon® processor-based workstations, visit www.intel.com/go/workstation

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1 Source: http://www.cs.toronto.edu/~bianca/papers/sigmetrics09.pdf
3 Based on comparisons between comparable HP Compaq* 8100 desktop PC (Windows* 7 Professional 32-bit with Intel® Core™ i5-650 processor, Intel® Q57 Chipset integrated, 4 GB DDR3 (PC3-1333 MHz) non-ECC (2x2 GB DIMM), HP 250 GB 3.5” 7200 rpm SATA 3.0 Gb/s NCQ, SMART IV NVIDIA Quadro* NVS 295 DP (256 MB DH) PCIe x16 Graphics Card vs. HP Z200* workstation (Windows 7 Professional 32-bit, 320W 89% Efficient Chassis, Localization Kit, Intel Core i5-650 processor, HP 4 GB (2x2 GB) DDR3-1333 ECC RAM HP 250 GB SATA 7200 1st HDD NVIDIA Quadro NVS 295 256 MB Graphics. As of 4/21/2010.
4 Based on 6 hours to recover 2 hours of lost work.