TECHNOLOGY BRIEF

Delivering Resilient and Reliable Workstations: The Role of ECC Memory

Intel® Xeon® Processor E5-2600 v3, E5-1600 v3, and E3-1200 v5 Product Families

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 through no fault of the user. They may sometimes crash your system and corrupt data; they may even change data and go completely undetected. The longer a system operates throughout the day, the greater the 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.

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10000001110011110001001 = $2,111,970
10000000110011110001001 = $14,818
DATA FLIP

1 in 3 systems have at least 1 correctable memory error a year.[1]

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.

228x more likely

It is more likely to see another correctable error in the same month after experiencing one.[2]

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 $100.[3] 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 $100 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.

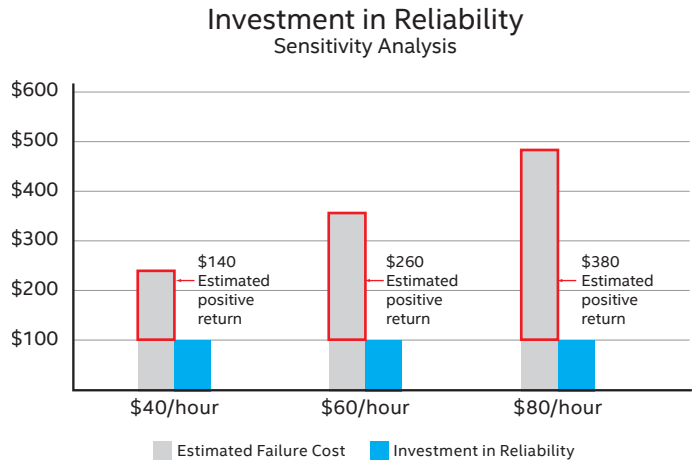

Figure 1. Investing in a reliable workstation with ECC memory can improve your productivity, which can significantly increase the overall return.[4]

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

[1] Source: http://www.cs.toronto.edu/~bianca/papers/sigmetrics09.pdf

[2] Source: http://perspectives.mvdirona.com/2009/10/07/YouReallyDONeedECCMemory.aspx

[3] Based on comparison between HP Z230 tower workstation with and without ECC memory as of August 11, 2015. Configuration information: HP Z230 tower workstation, Microsoft* Windows* 8.1 Pro 64 downgrade to Microsoft* Windows* 7 Pro 64, Intel® Xeon® processor E3-1231 v3, 400W 92% efficient Chassis, NVIDIA* Quadro K620 graphics card, 8GB (2 x 4 GB) DDR3-1600 memory (ECC or non-ECC, depending on price), 1TB 7200 RPM SATA hard disk drive, Slim SuperMulti DVDRW SATA Optical Drive, HP USB keyboard, HP USB optical mouse, HP 3-3-3 Tower Warranty. System price with ECC memory: $2015. System Price without ECC memory: $1915.

[4] Based on 6 hours to recover 2 hours of lost work.

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