

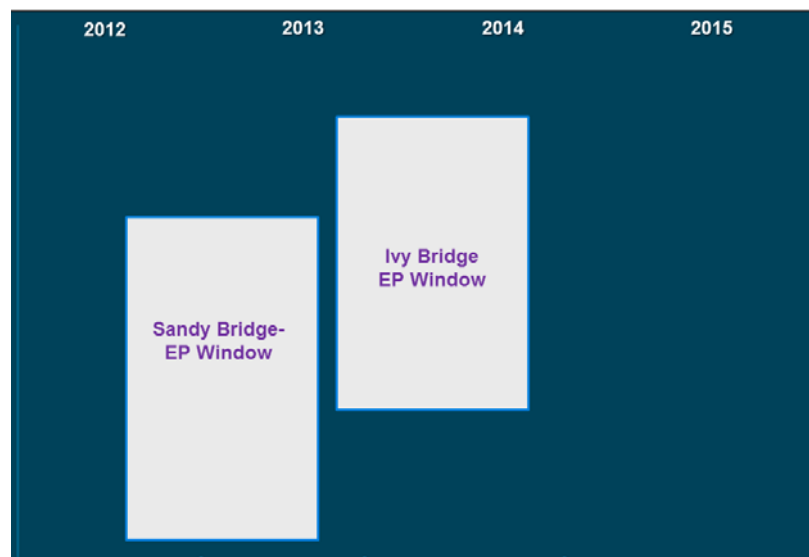


ABC,

Thanks for the opportunity for Strategic Advisory Services to review the question about server (DL 380 and 580 families) refresh issues. I recently had to review two other clients' portfolio of 380s and 580s with a similar question in mind.

Here are the factors involved in decisions about refresh timing at this point in time (Jan2012)

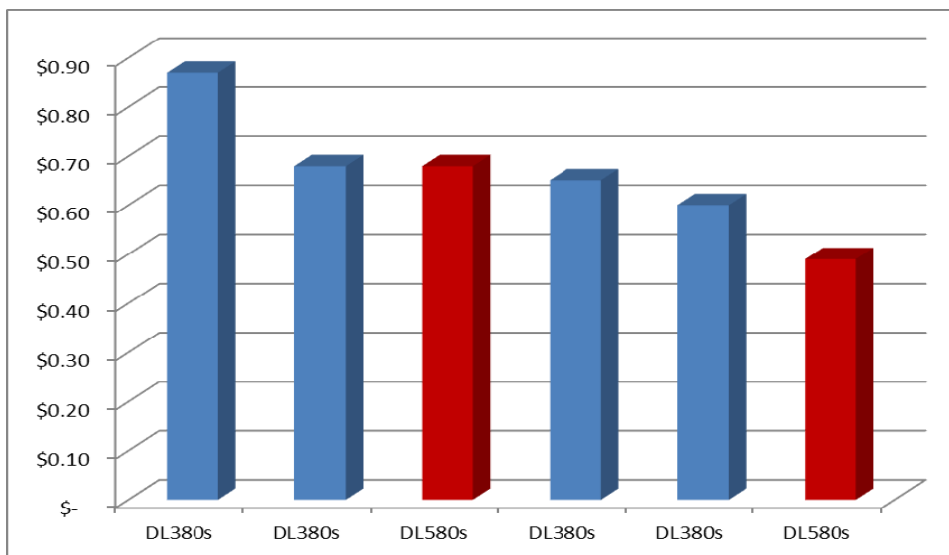
- ❑ The 380's and the 580's are about to be refreshed with the newest Sandy Bridge EP processors (2012 late Q2/early Q3). The new server units are expected to provide something in the 20%-35% improvement in performance per dollar. SB's successor—Ivy Bridge—is expected to arrive much sooner than would be expected for Intel's standard Tick/Tock timing.
- ❑ One of the key elements in refresh planning in XYZ's case has to do with the timing of the Ivy Bridge generation of Intel processors for *servers*, expected in mid-2013. Sandy Bridge is not expected to have a couple of the key technologies we will need for the future, including USB 3.0, SSD-direct-connect, and especially PCI 3.0. These will not be present on 'standard issue' Sandy Bridge servers. This argues that whatever we put in play in 2012 (even the newer Sandy Bridge units, but especially the current Westmere processors) should be flexible enough to cost-effectively replace within the 2014-2015 timeframe.
- ❑ Intel has actually created a refresh timing challenge for their customers, by placing Sandy Bridge and Ivy Bridge generations so close together. Just a visual mapping of the generations shows that customers who need to refresh in the 2012 window will be 'tempted' to upgrade to Ivy Bridge within 12-18 months.



	Units	5600 Equivalent	#5600s Needed
X5100	1,000	0.12	123
X5300	1,000	0.16	158
X5400	1,000	0.30	301
X5500	1,000	0.59	590

This argues that new deployments of current generation technology be held for a shorter window (24-30), to allow these benefits to materialize in the 2012-13 timeframe of Sandy Bridge.

- ❑ For the 380s and 580s that are coming off-lease BEFORE the Sandy Bridge EP window is mainstream and widely available (probably around the middle-end of Q2), these should probably be extended for a few months to allow refresh to the newer models (with the more normal 36-38 month lease periods).
- ❑ But remember that some of the newer SB units placed into service in early-mid 2012 might themselves be candidate for quick refresh to Ivy Bridge models barely 18-20 months later. XYZ should do a quick check of the current units, to see which sites/applications might need to be refreshed faster than the others (due to anticipated higher workloads or greater uncertainty over future workloads in the 2014-2016 timeframe). Those units/applications with greater uncertainty or higher expected workload growth rates should be placed on shorter lease terms in the SB refresh, with the remaining units on normal 36-38 month server cycles.
- ❑ Additionally, when the higher-end current-processor 380s were introduced, some clients opted for the newer 580's because the price points had begun to overlap. In the G7 family, this was fairly obvious (from TPC data):



This also suggests that current-generation 380s acquired today be held for only a short time, but in this case specifically for the capability to allow for the possibility of replacement by a 580 in the 2013/2014 timeframe. This only applies if application loads can be moved feasibly (via virtualization or simple migration) to other, denser server units. There are many other factors to be considered in server consolidation, of course (e.g. NIC congestion, I/O latency, DR, software licenses), but the economics at least allow us to have this as an attractive option.

Some of the above points might not be relevant to XYZ—they are based on the work done for other accounts and general server trends in large enterprises—but your client should at least make sure that any investments in current generation technology do not create future financial difficulties in exploiting these next two generations of server technology. The current technology is still outstanding and an excellent investment, of course, but one that still should be only held in the shorter 2-3 year window, for the above reasons.

Thanks again for the opportunity to help you help them, and I look forward to working further with you, in applying Macquarie's value to their successful use of technology finance for business success.

Glenn M. Miller (Jan 2012)
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