HPC User Site Census: Systems

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EXECUTIVE SUMMARY

The *HPC User Site Census: Systems,* a report in the Intersect360 Research 2010 Site Census series, provides a detailed examination of the server systems installed at a sample of HPC user sites. We surveyed a broad range of users about their current computer system installations, storage systems, networks, middleware, and applications software supporting these computer installations. Other reports in this series include: *HPC User Site Census: Processors; HPC User Site Census: Applications; HPC User Site Census: Interconnects/Networks;* and *HPC User Site Census: Storage*.

Our goal in this report was to discover system-level trends within the HPC user communities by examining supplier penetration, architecture trends, and node configurations.

Key findings of the Site Census surveys include the following:

- IBM, HP, and Dell were the top named vendors out of 35 in our all-site database. The top five named vendors (including SGI and Sun Microsystems) captured about half of the systems market. In-house systems (i.e., systems configured by internal staff, integrators, or contractors) exceeded the share of any individual vendor.

- In-house systems and IBM shared top ranking for number of nodes installed when outliers (i.e., systems with 2,000 or more nodes) are excluded. In-house system components may have been purchased from one or more of the major vendors along with servers from commodity server vendors.

- Two-processor nodes continue to dominate the installed base of surveyed sites with over 50% market share. However, the share for four- and eight-processor nodes is growing.

- Multi-core processors represent the majority of systems shipped since 2006. For recent installations and upgrades, single-core processor share is now in single digits, and four-core processors hold the greatest share.

- Memory usage per node and processor are growing, while memory per core has remained relatively constant over the years. As core count increases, so will memory requirements, impacting system design and cost.

- While frequencies are small, there is growth in the use of accelerators, both on-node and on independent special-processing nodes. Intersect360 believes that this technology is being evaluated at this time and may turn out to be an important component in future HPC systems.