HPC User Site Census: Systems

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EXECUTIVE SUMMARY

The *HPC User Site Census: Systems* report, part of Intersect360 Research's 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, Dell, and HP were the top named vendors out of 41 in our all-site database. The top five named vendors (also including SGI and Cray) captured 56% of the systems market. Within the commercial sector, HP is the top named vendor.
- IBM, followed by Dell, were the top named vendors for number of nodes installed when outliers (i.e., systems with 2,000 or more nodes) are excluded.
- Two-processor nodes continue to dominate cluster installations at surveyed sites with 60% market share. Four-processor nodes are installed on about 14% of the clusters. Both shares have been relatively consistent over the past five years.
- Multi-core processors represent the majority of systems shipped since 2006. For recent installations and upgrades, single-core processor share is now in very low single digits. Four-core processors hold the greatest share, followed closely by six-core processors.
- 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, affecting system design and cost.
- Accelerators are used on about 21% of the installed base with on-node being the preferred configuration. Intersect360 Research believes that this technology is being evaluated at this time and may turn out to be an important component in future HPC systems.