New Platform Provides Innovation

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Sky Bridge is the primary unclassified scientific computing platform at Sandia, serving all Mission Areas within the Laboratories. At the formal ribbon cutting in December 2014, Laboratories Director Paul Hommert emphasized the importance of the Institutional Computing Program in providing a critical core Laboratories capability. The deployment of Sky Bridge more than doubled the computing cycles available in Sandia's restricted computing environment, while incorporating the same underlying architecture as the existing ASC/TLCC2 compute clusters, thus allowing many existing computer codes to run on the system without any major modifications. Sky Bridge immediately addressed the shortfall in projected computing cycles for Sandia's programs of energy and environment, nuclear weapons life expectancy program (NW LEP), and Applied Laboratory Technology (ALT). From a technological perspective, Sky Bridge is contributing to the readiness of the data center facility and operations personnel for a transition to liquid cooling in future HPC systems and other high-density systems. By comparing the performance and energy costs of Sky Bridge to similar systems (e.g., Dark Bridge) that are air-cooled rather than liquid-cooled, it will also provide valuable data for making return on investment decisions for future purchases. Installation of Sky Bridge enables decommissioning of the Red Sky supercomputer, reduce energy and support costs, and make room for future HPC systems already planned through the ASC and Institutional Computing programs. Sky Bridge's use of liquid cooling (cold plate to the systems processors) and more efficient power distribution (480 V direct to the rack) saved over $700, 000 in construction costs while reducing annual operating costs by $120,000.