Crossroads: A Status on Design, Deployment, Acceptance, and Operation

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***Abstract*—The New Mexico Alliance for Computing at Extreme Scale (ACES) next-generation Advanced Technology System (ATS), Crossroads, designed by Los Alamos National Laboratory (LANL), Sandia National Laboratories (SNL), and HPE, will be deployed at LANL in support of DOE NNSA's Advanced Simulation Computing (ASC) mission objectives. Unique to the DOE NNSA Complex's ATS-class systems, Crossroads' architecture presents opportunities and challenges in satisfying the computational requirements of mission simulation and modeling workloads. We highlight some of the interesting elements of the initial design and revisions, deployment and acceptance planning, along with operational issues observed and anticipated in this procurement. Additionally, we discuss status of the acceptance activities including integration, setup, and preliminary results from the test suite, comprising micro-benchmarks, mini-applications, and production applications. DOE NNSA Laboratories, LANL, Lawrence Livermore National Laboratories (LLNL), and SNL's test-suite and corresponding figure-of-merit thresholds ensure success of mission workloads by confirming Crossroad's performance capabilities meet specifications. Challenges with the hardware and software stacks encountered as Crossroads matures to meet its performance and usability goals will be discussed.**

***Index Terms*—benchmarking; supercomputing; test harness; performance testing; HPC;**

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