Technology Challenges of Verification and Post-Silicon Validation for Supercomputer Fugaku

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Abstract

Fujitsu has developed the world's fastest supercomputer systems, including K Computer and supercomputer Fugaku. Such supercomputer systems are very large and complex, with more than 100,000 CPUs connected by more than 100,000 optical cables with a total length of about 900km. Once a functional or performance issue is found after the large-scale system has been assembled, it is difficult to identify and fix the cause. Therefore, in order to ensure that the system operates stably with the correct functions, expected power, and performance, various kinds of technologies are applied from requirements definition to manufacturing. In this presentation, I will introduce the overview of the Fugaku and the technologies used for verification (extraction of verification items, simulation, formal, power, and performance verification), testing (ATPG), post-silicon validation (automatic test generation), and manufacturing testing (test time reduction), in the development of Fugaku.