

Performance Evaluation of Parallel Sparse Matrix–Vector Products on SGI Altix3700

Hisashi Kotakemori¹, Hidehiko Hasegawa², Tamito Kajiyama¹, Akira Nukada¹,
Reiji Suda¹ and Akira Nishida¹

¹ CREST, Japan Science and Technology Agency
Graduate School of Information Science and Technology, University of Tokyo
7-3-1 Hongo, Bunkyo-ku, Tokyo 113-0033, Japan
{kota, kajiyama, nukada, reiji, nishida}@is.s.u-tokyo.ac.jp

² CREST, Japan Science and Technology Agency
Graduate School of Library, Information and Media Studies, University of Tsukuba
Tsukuba 305-8550, Japan
hasegawa@slis.tsukuba.ac.jp

Abstract. The present paper discusses scalable implementations of sparse matrix-vector products, which are crucial for high performance solutions of large-scale linear equations, on a cc-NUMA machine SGI Altix3700. Three storage formats for sparse matrices are evaluated, and scalability is attained by implementations considering the page allocation mechanism of the NUMA machine. Influences of the cache/memory bus architectures on the optimum choice of the storage format are examined, and scalable converters between storage formats shown to facilitate exploitation of storage formats of higher performance.