Investigation of the Possibility of the Large-scale Simulation in the Large-scale Shared Memory System

Project Representative

Kunihiro Matsuzawa

AdvanceSoft Corp.

Authors

Kunihiro Matsuzawa[*1], Kazuyuki Okazaki[*1], Shinsuke Ogawa[*1], Toshiyuki Asano[*2], Misako Iwasawa[*2], Yuichi Hirokawa[*2], Noriaki Nishikawa[*2], Takayuki Tomizuka[*1], Yo-ichi Tanaka[*1], Takuhito Kuwabara[*1], Tetsuji Ogawa[*1], Yoshihiro Ide[*1], Minoru Okamoto[*1]

＊1　AdvanceSoft Corp.

＊2　Japan Agency for Marine-Earth Science and Technology

Abstract

For industrial competiveness enhancement of Japan, it is important to make the most of super computers including the Earth Simulator. However, those industrial use is insufficient due to the lack of optimized software for those.

AdvanceSoft Corp. has many practical simulation software which have been developed by national project or in-house and provided to industry for many years. Optimizing these software to super computers will help large-scale simulation and high precision computation and contribute industrial use.

In this project, we ported and optimized these software to the UV2000 in the Earth Simulator, and measured large-scale parallel performance. We have started on-demand supercomputing service with simulation software, Advance/PHASE: First-principles Electronic Structure Calculation Software, Advance/FrontFlow/red: Fluid Dynamics Simulation Software, Advance/FrontSTR: Structural Analysis Software, Advance/FrontNoise: Acoustics Analysis Software, and Advance/DESSERT: Device Simulator, based on the result of the project.

Keywords: large-scale simulation, program tuning, improved algorism, performance of parallel processing, on-demand supercomputing