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Press Release

NEC Corporation
The Japan Research Institute, Limited

Delivery of Vehicle Body Molding Simulation System Based on Parallel Linux Cluster to Ogihara

NEC Corporation (hereinafter "NEC") (head office: Minato-ku, Tokyo, president: Akinobu Kanasugi) and The Japan Research Institute, Ltd. ("JRI") (head office: Chiyoda-ku, Tokyo, president: Shunichi Okuyama) delivered a press process simulation system to Ogihara Co., Ltd. ("Ogihara") (head office: Ohta-shi, Gunma, president: Toshihide Saeki), a company engaged in the design and manufacture of press dies for automobile bodies and parts. The system, which is used for the simulation of molding processes for dies for the production of automobile bodies, has begun full-scale operation.

This system is the first result of collaborative efforts between NEC and JRI for the metal press process simulation equipment market. It is configured with multiple IA servers (note 1) connected via the network. The system uses 12 "Express5800/Parallel PC-Cluster" units and JRI's JSTAMP-Works (note 2) CAE software for press molding analysis. These parallel Linux (note 3)-based PC cluster systems are capable of parallel computing for extremely high-speed processing. While the conventional system took some 120 hours to perform computation processes for a molded part, the new system can complete the same processes in four hours.

By utilizing the new system, Ogihara plans to expedite and streamline the press molding process simulations that are necessary for the manufacture of automobile bodies and other mainstay products of the company, so the company can improve quality, shorten development periods and reduce costs.

The features of the system are as follows:

1. High-speed distributed processing by 12 IA servers equipped with the newest CPUs

Twelve Express5800 series IA servers equipped with U.S.-based Intel's latest Xeon™ processors (3.06 GHz) (note 5) perform high-speed distributed processing of the LS-DYNA (note 4) numerical computation function (solver section) in JSTAMP-Works.

The previous system, which used one UNIX workstation (1 CPU) (note 6), took approximately 120 hours to perform complex calculations for molded parts using data totaling about 50 megabytes in size. The new system can complete the same calculation process in four hours, thus offering 30 times higher performance. Since the new system allows detailed modeling calculations within a practical time frame, higher analysis accuracy can be realized.

2. Automatic and efficient execution of calculation processes by multiple users

The system's workload management software uses NEC's HyperClusterEngine middleware for a parallel Linux cluster system, which is based on LSF workload management software (note 7) of Platform Computing in Canada to which a system-fault-tolerance function and other original functions have been added.

This enables multiple users to automatically and efficiently execute calculation processes with the 12 computers (nodes) that comprise the parallel Linux cluster system using convenient interface with web browser. Furthermore, it has eliminated the need for the development of a workload management function, thereby achieving efficient system construction.

In recent years, parallel Linux cluster systems have been actively incorporated by manufacturing companies, particularly automobile-related manufacturers, because of their superb cost-performance and expanding application lineups. They are used primarily as simulation systems for structural, collision and hydrodynamic analyses, and are contributing to the reduction of development lead times and costs.

NEC and JRI will continue to promote mutual cooperation for expanding sales in the market for metal press process simulation equipment. To that end, the two companies plan to conduct joint verification experiments for solutions created using NEC's space-saving, high-performance Express5800/Blade Server products as the computation node of parallel Linux cluster systems and by combining them with workload management middleware such as JSTAMP-Works, LS-DYNA and HyperClusterEngine.

(note 1) IA stands for Intel Architecture.

(note 2) JSTAMP-Works is a trademark of The Japan Research Institute, Limited.

(note 3) Linux is a trademark or registered trademark of Linus Torvalds in the United States and other countries.

(note 4) LS-DYNA is a trademark of the Livermore Software Technology Corporation.

(note 5) Xeon is a trademark or registered trademark of Intel Corporation and its subsidiaries in the United States and other countries.

(note 6) UNIX is a registered trademark of The Open Group.

(note 7) LSF is a registered trademark of the Platform Computing Corporation in the United States and other countries.

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< Additional information regarding Express5800/Parallel PC-Cluster >
Homepage "8-Bangai"
<http://nec8.com>

< Additional information regarding JSTAMP-Works and LS-DYNA >
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