Preface
Special Issue on Next-Generation Data Centers in Cloud Age

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Now that the worst of the economic crisis that began two years ago is over, business is gradually picking up.

In such a situation, IT systems are gaining importance as management infrastructure of companies and evolving into IT systems that support business operations.

Improving reliability and quality from the perspective of business continuity, controlling the cost of ownership and operations, which are increasing year by year, and being aware of the environment (reducing power consumption and CO_2 emissions), which are required of IT systems as management infrastructure, are among the management challenges facing companies. Expectations for data centers, as a means of addressing these challenges, have become ever greater in recent years.

To fulfill these needs, the Fujitsu Group has established system centers in 58 locations in Japan since it opened the Tatebayashi System Center in 1995, and has developed the outsourcing business. In addition, we are providing nonstop outsourcing services 24 hours a day, 7 days a week, in more than 90 locations in total, including centers in Asia, America and Europe. Last November, we opened the new annex of the Tatebayashi System Center as a core of further expansion of this outsourcing business and the foundation of the next-generation Cloud service business. It was opened as a flagship data center to take over the highly reliable operation system of the existing Tatebayashi System Center, which has been in uninterrupted operation for over 14 years, and is equipped with Fujitsu's latest technologies for data centers.

The first merit offered by Fujitsu's data centers is the guaranteed absolute robustness. The fact that we can provide outsourcing

services 24 hours a day, 7 days a week allows our customers' business infrastructure to operate stably and prevents them from missing business opportunities when the infrastructure shuts down. To ensure high reliability and quality for these IT systems, the location, building structure (such as seismic isolation), electrical power supply, motive power, air conditioning and security are very significant technological elements.

The second merit is releasing customers from the burden of having to own and operate IT infrastructure. We lead IT infrastructure from ownership to utilization and optimize the costs required for operating our customers' IT infrastructure. Cloud services based on virtualization technology (a service-oriented platform) improve the usage rate of IT resources and optimize our customers' business infrastructure. These Cloud environments also bring about a new human-centric market through their combination with sensor network technologies.

The third merit is the contribution to the environment. Our data centers consume less energy than the IT infrastructure of our customers, which leads to a reduction in CO_2 emissions. Specifically, integrating customers' infrastructure into the high-performance, service-oriented platform of data centers reduces IT energy consumption. In addition, integrating facility energy, including that for air conditioning provides optimized control. In this way, our customers can significantly reduce their burden on the environment.

The leading-edge technologies that produce these merits of data centers are presented in this special issue on Next-Generation Data Centers in the Cloud Age. Here, we will show you Fujitsu's idea of a grand design for next-generation data centers. We will also present our approaches, focusing on the latest technologies implemented in the new annex of the Tatebayashi System Center, and application examples of Cloud services that make use of these technologies.