Promoting Environmentally Conscious Datacenters

Our Approach

With the spread of cloud computing, energy use by datacenters is on an upward trend and society is showing more concern over the environmental performance of datacenters. Also, electricity costs are increasing with rising electric utility rates. Datacenters comprised 27% of FY 2012 CO_2 emissions in the Fujitsu Group, with emission rates increasing 8.1% over the three years from FY 2010–12 at our 19 main datacenters in Japan. Furthermore, our datacenter CO_2 emissions are expected to continue to rise as our cloud business grows, making environmentally conscious datacenters a social responsibility for the Group, as well as a critical theme to address in strengthening our business foundation over the long term.

In the Fujitsu Group, we are targeting* approximately 80% of our datacenters (based on server room floor space) and we are working to boost environmental performance.

* **Activity targets:** Global datacenters 1,000 m^2 or larger, in principle, or specific datacenters requested by datacenter business units.

Summary of FY 2014 Achievements

Targets under the Fujitsu Group Environmental Action Plan (Stage VII) (toward FY 2015)	Improve **environmental performance** of our major datacenters
FY 2014 Key Performance	Formulated Guidelines for Promoting Environmentally Conscious Datacenters Adopted PUE visualization tools

FY 2014 Performance and Results

Established Guidelines for Promoting Environmentally Conscious Datacenters

In order to implement the Fujitsu Group Environmental Action Plan (Stage VII), we continued activities from the previous fiscal year to finalize an action policy in the Green Datacenter (GDC) Committee. We utilized the GDC Working Group (GDCWG), which plans and implements activities under the GDC Committee, and Japan and Overseas Sub-Working Groups (SWGs) to proceed with activities that have produced the target results.

As part of these activities, we have formulated Guidelines for Promoting Environmentally Conscious Datacenters, with the objective of smoothly implementing energy saving initiatives at our datacenters (DC). The Guidelines are shared specifications compiling information related to energy saving efforts at datacenters and include rules, methods for improvements, cautions to be heeded during implementation, and case studies of successful upgrades.

Adopting Tools for Visualizing Power Usage Effectiveness (PUE)

We built our own PUE visualization tools, and adopted them in May 2015, with the objective of establishing an environment for continual upgrades and for sharing information about our DC energy usage. These tools are one of the functions of our Environmental Management Dashboard that has been adopted at all Fujitsu Group business sites within Japan. The system displays monthly tallies of DC energy usage, as well as PUE, and DC Maturity Models (DCMM).

Tracking PUE Values at our Major Datacenters

PUE values at our major DCs are identified and calculated using The Green Grid's* calculation method. Improvement measures are also undertaken utilizing the same organization's DCMM.

* **The Green Grid:** A non-profit organization established in February 2007 mainly by U.S. IT companies to promote energy efficiency improvements for datacenters and IT equipment in the IT industry. Fujitsu has been participating in the organization since March 2008.

PUE Visualization Tools

PUE Values and PUE Calculation Method

PUE values	PUE calculation method, etc.
Average: 1.65 Range: 1.33–2.66 Applicable DCs: 35 centers	- The Green Grid's method used - Implementation of improvement initiatives using the organization's DCMM

FY 2015 Targets and Plans

Promote Initiatives for Increased Environmental Performance

We plan to apply, and consistently revise, the Guidelines for Promoting GDC while continuing to adopt external ventilation, "visualize" air-conditioning temperatures and energy, promote full usage of rack space, flexibly adjust air-conditioning temperatures, and separate heating and cooling functions.

In addition, we plan to utilize tools for visualizing PUE and leverage those tools as a means to share information and exchange opinions among all parties working with our DCs.

Promoting Environmentally Conscious Datacenters

Main Activities of FY 2014

Datacenter environmental efforts in Australia

The Fujitsu Group promotes the environmental contribution of its datacenters in Australia; three out of six sites are certified under the National Australian Built Environment Rating System (NABERS) and all sites are ISO 14001 Environmental Management System Certified.

NABERS is the world's first tool that compares the energy use, environmental performance and efficiency of IT equipment based on actual performance and is validated by an external government department. It has been applied to buildings in Australia for over 10 years and has recently included datacenters.

Noble Park Data Center

Noble Park Data Center (4,000 square meters) was the first Australian datacenter to achieve formal certification resulting in a four-star energy rating within two data halls and a 3.5 star rating for an entire facility. This was a milestone achievement because no other datacenter in Australia had achieved certification.

Homebush Bay

To achieve 3.5 stars in NABERS; the datacenter at Homebush Bay underwent an extensive refurbishment in 2008, including adding the energy-saving features now used in the building. First, there is a high density, hybrid cooling technology that uses recycled, chilled water and spatial layout planning to minimize thermal currents.

Second, there is a closed-loop cooling system that significantly reduces the amount of water needed to maintain the facility at the industry standard in terms of temperature and humidity.

A state-of-the-art building control management system allows monitoring of the power consumption around the facility in real time and allows settings to be adjusted to maximize efficiency.

Western Sydney Data Center

Western Sydney Data Center was commissioned in November 2011 and was purpose-built with energy efficiency as a prime consideration. It achieved four stars in NABERS. In addition to the energy saving features from the Homebush facility, the Western Sydney facility also incorporates a Diesel Rotary Uninterruptible Power Supply (DRUPS), indirect free cooling, a heat-reflective roof, storm-water harvesting and the extensive use of recycled materials.

Fujitsu Datacenters are leading the way with energy efficiency. With the industry average being 3 stars, our rated datacenters are proven to be 27% more efficient, which results in a combined carbon emission savings of over 12,000 tons.

In addition to the NABERS rating, the Western Sydney Data Center also gained a Certified Energy Efficiency Datacenter Award (CEEDA) gold rating for a client-specific data hall. CEEDA certification is based on the European Union's Code of Conduct for Datacenters, and it offers bronze, silver and gold ratings for datacenters.

Western Sydney Data Center

A Stakeholder's Comment

"Fujitsu has been a true partner in the NSW Government's efforts to cut emissions and encourage energy efficiency. As part of a technical working group, the company's advice has been integral in helping create the world leading NABERS Energy for data center benchmarking tools. By championing their use, Fujitsu is contributing to these robust tools becoming the industry standard."

Rob Stokes

NSW Environment Minister