



# Transformational Data Center

## Beyond Green Computing

**Escalating energy costs and the ever expanding volume of data are forcing data centers into more economical, ecological designs. But a strategic approach is needed that takes into account their entire infrastructure and operation – not just the environmental management of IT equipment.**

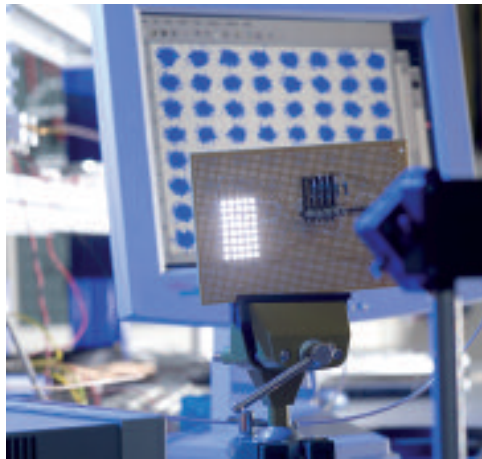
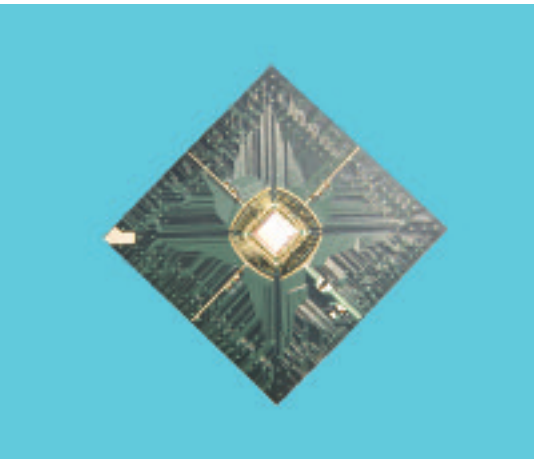
**Green thinking reaches the data center**  
Ecological thinking has at last reached the nerve centers of the digital age – the world's data centers – and for very hard economic reasons. The world's 30 million servers are currently using up enormous energy loads, power needs having doubled since 2000 and carbon emissions on line to overtake those of the airline industry by 2020.

A host of simultaneous factors is driving this dilemma – from exploding internet usage worldwide to new legislation on prolonged storage, from business data multiplication to energy scarcity. Green computing or 'Green IT' as it is commonly known, however, only goes so far in alleviating the problem. After all, 98% of carbon emissions are still being caused by other activities such as manufacturing or road travel.

### **From Green IT to IT for Sustainability**

The answer lies in getting IT not only to improve its own carbon footprint but to contribute significantly to ecological improvement in every other industrial and civil infrastructure. This, of course, will also result even more noticeably in energy efficiency, operational excellence and improved business profitability.

Siemens IT Solutions and Services, the specialized IT arm of the world's most international industrial player, has the answer: IT for Sustainability. At the core of this new concept, which takes Green IT only as its starting point, lies the Transformational Data Center – a ground-breaking strategy in data center design, operation and long-term competitiveness.



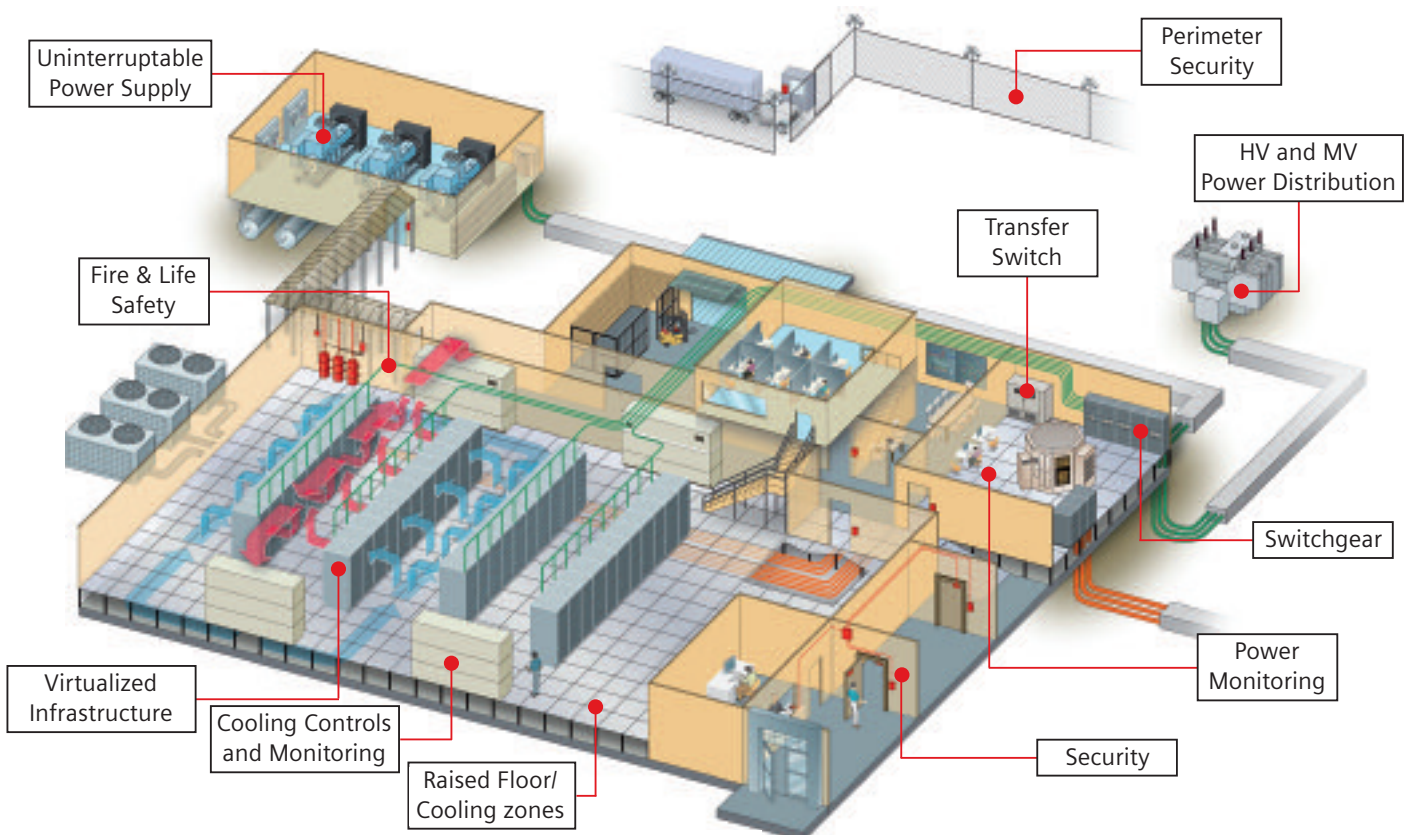
**Experience-based transformation**

At Siemens IT Solutions and Services we look after some of today's most complex technology tasks – such as taking care of the Siemens IT infrastructure itself – the eighth largest in the world. Our experience transforming the environmental and economic performance of our own data centers has provided rich insights into the new approach. Reducing the number of data center locations in Germany, for instance, from 100 to just 30, we introduced advanced new servers that cut energy consumption by 80%. Ground water for cooling and waste heat recycling also contribute significantly to positive ecology and economy impacts.

Along with the virtualization of desktops and applications, the Transformational Data Center is a core component of our strategic IT for Sustainability model. The world's only holistic approach to sustainable technology usage, spanning social and corporate governance as well as environmental sustainability and energy efficiency. Thus, the Transformational Data Center is just the starting point for decentralized energy management solutions, water information systems, emission data exchange, telematics, smart grid energy distribution as well as e-health infrastructure and applications.

**State-of-the-art in Beijing**

An excellent example of the Transformational Data Center is the regional site for Siemens in Beijing, opened in May 2008. Comprising 100 racks, 630 servers and 490m2 of floor space, this data center is green by design, construction and operation. Environmental construction is supported by free air-based cooling, energy-saving lighting and a power consumption load per server that has been reduced by 36.78%. Inside our Transformational Data Center solution lie three core components – Active Energy Management, Virtual Enterprise Computing and IT Automation.



Going beyond Green IT to transform your entire environment



## Sustainable Advantage

The Transformational Data Center from Siemens IT Solutions and Services is a breakthrough concept because unlike every other Green IT strategy it is shaped by a much wider multi-infrastructure perspective – from construction to security, from energy to water management, from building technology to communication and traffic.

### Active Energy Management

Sustainability in all its forms – financial, environmental, social – lies behind the energy-efficient Transformational Data Center. Active Energy Management covers efficient power and cooling, power management as well as best practices for rack layouts, cabinet placement and environmental controls. Thus addressing all aspects of data center operations, we facilitate more effective space planning and monitoring of peak energy consumption. Highly advanced Computational Fluid Dynamic (CFD) models are used to provide a better data center design that not only minimizes hot and cold air re-circulation, but also eliminates potential cooling problems. The use of CFD modeling avoids mistakes and provides the optimal solution to conserve energy and saves on both capital and operational costs.

### Virtual Enterprise Computing

The second core component of our Transformational Data Center is Virtual Enterprise Computing. Virtualization, or the process of decoupling applications and hardware, is the key to maximizing the allocation of compute capacity according to business demands. A holistic platform for dynamic resource allocation and the control of business processes, Virtual Enterprise Computing combines the benefits of consolidation, optimization

and virtualization. This industrialized approach to core data center operations delivers a highly available, fault-tolerant computing environment that includes disaster recovery as well as business continuity services. Implementing Virtual Enterprise Computing has allowed Siemens IT Solutions and Services, for example, to lower its own IT costs by 30%.





### IT Automation

Our third pillar is IT Automation. The key to efficient IT management, our IT Automation approach implements uniform standards consistent with the IT Infrastructure Library (ITIL) and IT Service Management (ITSM). Managing IT processes holistically from design and implementation to documentation, our IT Automation solutions address both the delivery and management of processes – from incident, problem, configuration, change, and release management to service levels, financials, continuity, availability and capacity. Taken together, these three core components of the Transformational Data Center – Active Energy Management, Virtual Enterprise Computing and IT Automation – present you with unbeatable value and long-term sustainability.

### Executive benefits

As a Chief Executive Officer, create business advantage as you optimize your cost of performance and sustain real-time business throughput. As a Chief Financial Officer, synergize your technology infrastructure for operational excellence as you create more cost transparency and control. As a technology or information executive, transform your ability to manage, share and deliver knowledge and compute assets as you maximize return on technology investment.

### Sustaining measurable results

The Transformational Data Center from Siemens IT Solutions and Services is bringing together economic and ecological results for long-term sustainability – from 91% file storage server reduction and capacity utilization more than doubling, to 50% energy savings through ground water cooling. Overall, the Transformational Data Center promises an energy efficiency improvement of between 30% and 50%. And with progressive outsourcing as part of our Siequence® approach, we also bring you consistent innovation and cost improvement over time. When it comes to transforming a complex, multi-infrastructure location such as your data center, look to a partner that understands sustainability beyond IT.

Our Executive Briefing Center in Munich is designed as a global competence showcase in this holistic new approach. Experience for yourself the all-round scope and attention to close detail which is transforming the economic as well as the environmental performance of tomorrow's data centers. Whatever business arena you compete in, and wherever in the world you operate, the Transformational Data Center from Siemens IT Solutions and Services is your platform to future sustainability.

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Order No.  
U29734-J-2401-1-7600  
10/08 | Printed in Germany

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