

**IBM Addresses Designs for the New Enterprise Datacenter**

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On June 11th, 2008, IBM announced its strategic focus on future designs and tools for the datacenter as part of its overall [Project Big Green initiative](#). IBM is offering a selection of standardized datacenters that are available in a number of different modular form-factors. Included as part of this offering is a containerized datacenter that complements its traditional design and construction capabilities for commercial real estate projects. This announcement clearly outlines IBM's vision for the future datacenter that is geared toward delivering on customer needs for reducing time to market, improving availability, lowering risk as well as optimizing for energy consumption. The specific offerings include:

- **Enterprise Modular Data Center:** This is a standardized blueprint for a 5,000 square foot datacenter module. As the needs of a customer grow, three additional modules can be combined with the original module for a total of 20,000 square feet. Customers can continue to add single modules or groups of modules as their requirements increase. This modular datacenter can be built in a variety of commercial real estate sites and is highly optimized for energy efficiency. More than 66% of the overall energy consumption for each module is from its IT load (vs. loads from additional datacenter infrastructure such as UPSs, PDUs, HVAC equipment, etc). Customers can expect the implementation of a 5,000 square foot module taking 25% less time than a custom datacenter design and build project. The Enterprise Modular Data Center is a complement to IBM's Scalable Modular Datacenter, which is a smaller modular design of 500-2,500 square feet that typically takes 8-12 weeks to deploy.
- **Portable Modular Data Center:** IBM is offering a containerized datacenter with servers, storage, networking devices and power and cooling equipment delivered in a standard size shipping container. Customers can choose containers that are 20 or 40 feet in length, and these datacenters can be literally drop shipped to any interior or exterior location where network and utility connections exist. This type of datacenter can be made available in as little as 12 weeks and can incorporate a variety of vendors' equipment, beyond just IBM systems. IBM claims that the Portable Modular Data Center has a 66% to 77% DciE efficiency. IBM is targeting this offering at customers that require temporary datacenter capacity, or those that require capacity in a remote site. One of the advantages of this type of datacenter is that it can be relocated using industry standard transportation.
- **High Density Zone:** A pre-configured 200-square-foot starting configuration of racks of server and storage systems along with power and cooling infrastructure that is optimally designed in some cases enclosed so that it can be installed within an existing datacenter. This type of solution is aimed at customers that require a high-density environment without disrupting their current datacenter operations. The starting configuration can support up to 840 blade servers and is promoted as costing 35% less than retrofitting an existing datacenter.

Each of these datacenter offerings is available through IBM's Global Site and Facilities Services organization. IBM reports that this group has delivered more than forty Scalable Modular Datacenters in the past year and continues to offer custom-designed datacenters as part of its expertise. IBM also emphasizes the ongoing use of complementary technologies as part of its modular datacenter, including server and storage virtualization technologies, as well as its new energy management software as part of

its Tivoli Monitoring Software. This software integrates information from systems, building controls and datacenter infrastructure equipment to monitor, measure and manage the energy consumption and heat load of the datacenter facility. This announcement is part of IBM's Project Big Green initiative to reallocate \$1 billion a year to energy-efficient products and services.

IBMs announcement flies in the face of conventional datacenter design and construction projects. Today's typical datacenter is custom built on a per location basis and is usually overbuilt to include floor space and datacenter infrastructure for future growth requirements. The average age of a datacenter today in the United States is 12 years, and a datacenter is typically built for a 20-25 year lifecycle.

The traditional one-off approach to the datacenter has created a number of challenges for IT organizations, and these hurdles have become particularly evident recently as existing datacenters start to age. Power and cooling issues are at the forefront of many datacenter concerns, and retrofitting existing datacenters to account for the increasing density of servers and storage devices has become something of a science project for many customers as there is no simple to solution for the more than 10,000 individual enterprise-class datacenters worldwide. The list of solutions and "best practices" for solving today's datacenter challenges is long and varied, which is typical of any emerging market where solutions quickly become fractured due to lack of standards.

IDC believes that the datacenter of the future will increasingly default to a standardized design and that a datacenter "blueprint" will become a requirement for most companies to optimize the economics of the datacenter. A standardized datacenter offers a number of advantages over the traditional custom built datacenter:

- **Time to market.** The typical datacenter takes 3.5 years to build, from the time it is initially scoped to the time it is production ready. This is a real challenge for many datacenter planners given that the typical lifecycle of an x86 server is 3-5 years. From the time a datacenter is scoped to the time it is built, many customers have already retired a generation of technology.
- **Lower risk:** Given the time and planning that it takes to construct a traditional datacenter, IT organizations find themselves at risk for project overruns as well as miscalculating the capacity required. As most datacenters are planned for a 20-25 year lifecycle, capacity planning from a business and systems perspective becomes imperative. A standardized datacenter has a pre-defined load capacity that guarantees power and cooling support, and its modular design allows space to be built on an as-needed basis.
- **Pay as you grow:** Rather than paying to condition an entire 25,000-100,000 square foot space, customers are able to build modules as their demand grows, deferring costs without giving up on scalability and better aligning capital and operating costs to IT requirements as needed.
- **Shorter payback period:** Lower upfront costs and optimization for datacenter efficiencies drive faster return on investment.
- **Enhanced management and predictability:** Part of the challenge that many companies face with multiple IT sites is that each location is different from a facilities standpoint. It often takes a staff that are acquainted with the site to understand what changes are required from a system or facilities standpoint. By standardizing the layout of the datacenter across sites, a central IT staff can be trained to manage all sites from one location, or customers can deploy a follow-the-sun management model more easily where IT staff in different locations across the world can take over the management of all global facilities. This predictability of layout and power and cooling capability aids in improving uptime.
- **Make high density a design point:** The future datacenter will increasingly support high density systems such as bladed servers and storage systems. This modular approach makes high density a feature rather than a problem.
- **Simulation:** As the future datacenter becomes more predictable, it opens up the opportunity to build tools that can perform "what-if" scenarios. This has the double effect of aiding new installations as well as allowing staff to be more comfortable with the overall datacenter management in response to an event.

While the standardized, modular and repeatable datacenter is still considered a new approach to datacenter design, IDC believes that this is a necessary evolution for the datacenter and will aid significantly in driving awareness that the future datacenter should be constructed as a holistic system, rather than a collection of siloed technologies.

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