

Converged Computing Requires Converged Power

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Executive Summary

Whether faced with the task of accommodating more users, consolidating datacenters, increasing virtualization, improving uptime, or just improving response times, the task of evaluating and implementing all of the required technology can prove both arduous and frustrating. A number of vendors have joined together to provide pre-defined rack level solutions of best-of-breed hardware along with software optimized to work on that configuration. The Vblock from VCE and FlexPod from NetApp + Cisco are but two examples of these “converged” systems. They typically are deployed entire racks at a time. A benefit of converged systems is that the buyer does not have to know as much about the internal workings of the various pieces of the system in order to have a rapid and successful deployment.

Converged systems attempt to make things simpler for the IT team to administer, and are comprised of the familiar building blocks of the datacenter. Taking this approach to another level, the makers of “hyperconverged” systems such as Simplivity and Nutanix integrated all of the pieces of hardware back into a 2U form factor, along with very sophisticated software that enables each unit to be discovered, integrated, and treated as a linear expansion of both compute and storage capability. No more NAS or SAN. No more compute clusters. Just more blocks. All appearing on an easy to use management interface that is very refined in its functionality and scope. Figure 1 shows the rapid adoption of virtualization and containers that drives adoption of converged systems.

The ability to buy both converged and hyperconverged systems for the datacenter has led to the need for rack level power that is as flexible and sophisticated as the systems themselves. Learn how the latest “All-in-1” family of HDOT Switched PRO2 PDUS from Server Technology addresses the power needs of people implementing converged and hyperconverged systems in their datacenter.

Converged Power (cont.)

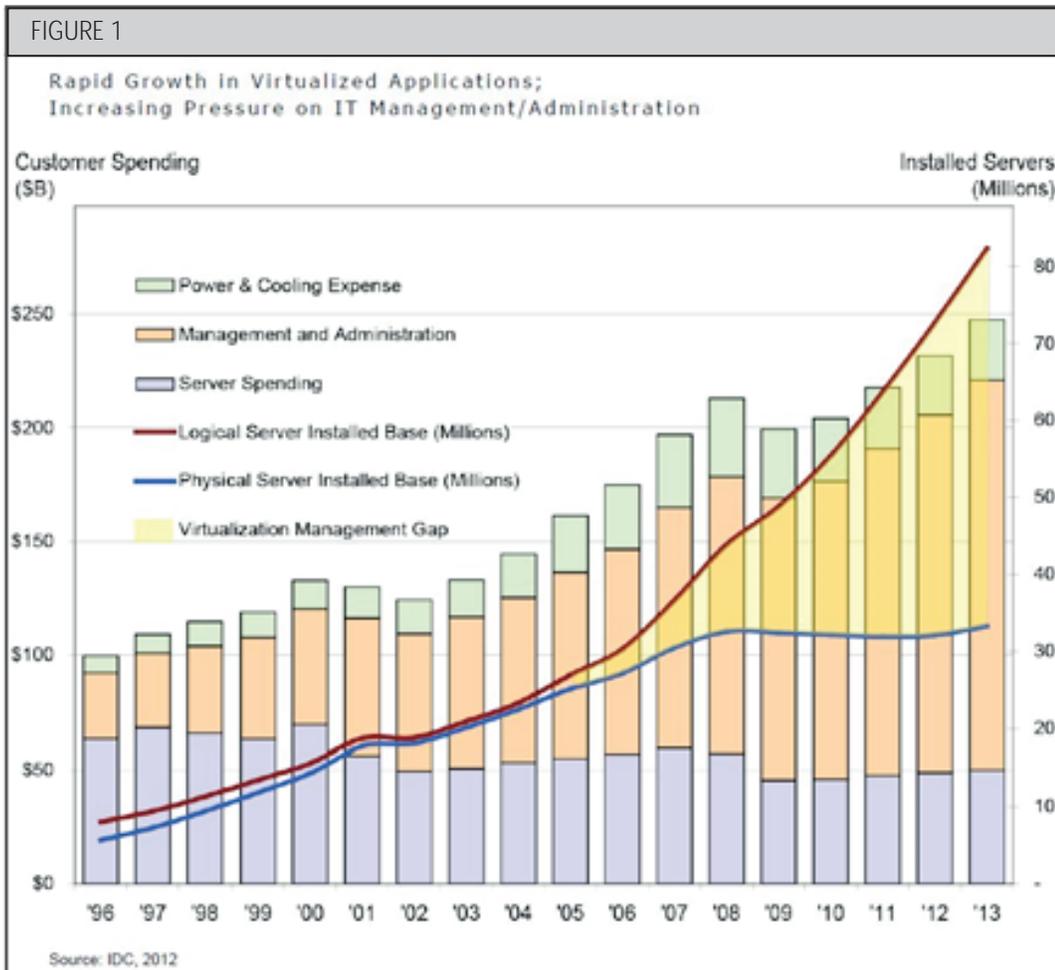


Figure 1 - Why Datacenters are shifting towards converged infrastructures¹

Converged Infrastructure

When you put all of the traditional datacenter IT pieces into a single rack, you have the elements for an all-in-one IT solution that provides compute, networking and storage. Adopting a converged infrastructure can yield the following tangible benefits:

- Fewer racks required for a given level of functionality, resulting in less datacenter resources being consumed. In some cases, this may result in the elimination of an entire datacenter
- Reduced energy consumption, resulting in lower operational expense (opex) for the datacenter and improved energy utilization and efficiency
- A more reliable software stack resulting from implementing a pre-validated hardware configuration
- Easier system maintenance and administration²

¹ <http://www.datacenterknowledge.com/archives/2013/05/09/why-data-centers-are-shifting-towards-converged-infrastructures/>

Converged Power (cont.)

Hyperconverged Infrastructure

The hyperconverged solutions from companies such as Nutanix, Scale, and Simplivity take the concept of the converged systems (rack level solutions) and reduce the size to a convenient 2U form factor. They rely on the software of VMWare or Xen in order to bind the hardware together in a logical fashion. "Hyperconvergence is a type of infrastructure system with a software-centric architecture that tightly integrates compute, storage, networking and virtualization resources and other technologies from scratch in a commodity hardware box supported by a single vendor."³

"The most important difference between the two technologies is that in a converged infrastructure, each of the components in the building block is a discrete component that can be used for its intended purpose -- the server can be separated and used as a server, just as the storage can be separated and used as functional storage. In a hyper-converged infrastructure, the technology is software defined, so that the technology is, in essence, all integrated and cannot be broken out into separate components."⁴

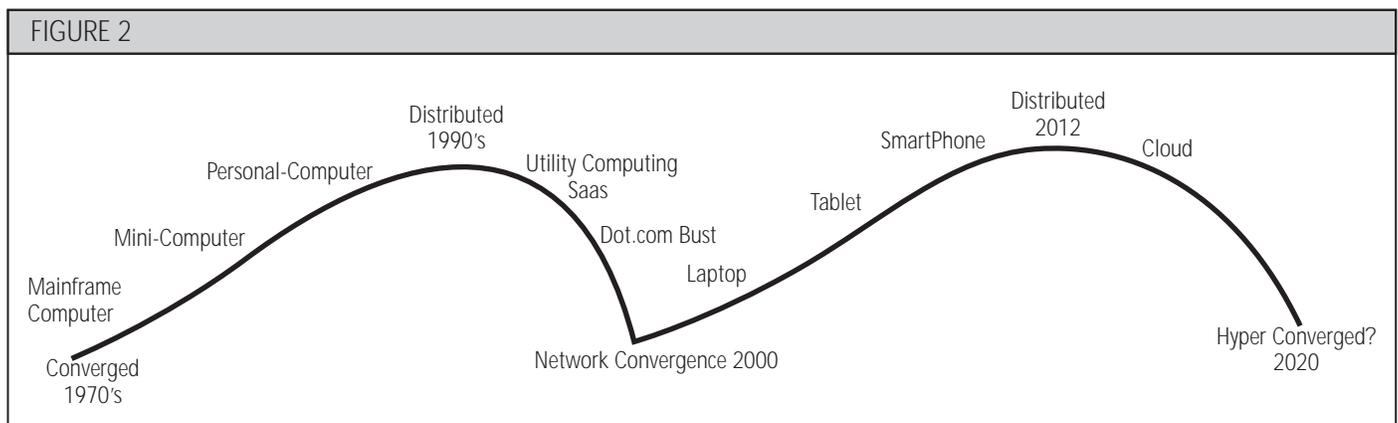


Figure 2 Adoption cycle of hyperconverged infrastructure⁵

Challenge

For those customers that having existing racks deployed in their datacenters, converged systems vendors provide an equipment list and an assembly diagram that show the end user how to rack, stack and wire the component pieces. Rarely do they tell the IT manager how to power the solution. How many outlets are needed on the PDU? What types of outlets are required? Frequently the networking gear needs C19 outlets, while the compute and storage components of the converged system need only C13 outlets. This requires the datacenter operator to calculate the power requirements for the infrastructure and shop for a PDU that meets the needs of the hardware. An inexperienced IT team may be forced into relying on the plate rating of the hardware components to size the

Converged Power (cont.)

power infeed to the rack rather than using the observed power draw of the component pieces derived from prior measurements taken in the datacenter.

For the adopters of hyperconverged systems, knowing the power needs and selecting a PDU are somewhat simplified because all of the components are the same size, and use the same outlet type. Usually the incremental size of a hyperconverged system is 2U, and the outlet required is a C13. But the datacenter operator needs to plan in advance and make a decision to either provision only enough power for what she needs today, or else overprovision on power and have outlets remaining unused in the rack until the business case warrants implementing additional blocks. Providing enough outlets to allow for a full rack and having enough available power can prove to be a daunting task. Ensuring that rack PDU does not get over subscribed as the rack load is grown takes effort and knowledge. The IT and facilities teams need to work together to ensure that not only is the individual rack able to support additional systems, but also the row level circuit and upstream power systems can take the additional load. This requires visibility to aggregate power draw beyond the rack.

The Converged Power Solution

All-In-1 converged power is the integration of the right combination of form factor, power density, outlet density, and feature set in the rack level power distribution unit (PDU) to enable converged and hyperconverged systems to maximize uptime, perform reliably, support remote management, and provide the tools to enable capacity planning and room for growth in the future. The Switched HDOT Alt Phase Pro2 PDU provides the outlet density (up to 1 per RU), power capacity (up to 22 kW at 415V/30A, 3 phase), operating temperature range, and manageability for the most demanding datacenter implementation.

The Benefits of All-In-1 Converged Power for Converged and Hyperconverged Systems

In golf, the skilled player knows how to consistently hit the “sweet spot” of the club to provide the best control, the most power, and the longest drive. In the datacenter, the IT professional has to know how to select and manage both hardware and software to hit the “sweet spot” of uptime, reliability, performance, and efficiency. By adopting converged or hyperconverged systems along with converged “All-In-1” power such as the Switched HDOT Pro2 PDU from Server Technology, the IT team can see the following benefits:

- Power path redundancy
- Secure and reliable remote management capability
- Form factor (1U, 2U, zero U PDU)
- Power density
- Outlet density
- Easy to balance loads
- Cost effectiveness
- Expansion capability
- Environmental monitoring, trending
- Maintain high availability to your data
- Stay informed of rising loads
- Proactive management of power supplies
- Plan for future success

Why Server Technology for Converged Power

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Server Technology's power strategy experts have provided power solutions for labs, data centers, branch offices and telecommunications operations for 30 years. Over 60,000 customers around the world rely on our cabinet power distribution units and award winning power management solutions to reduce downtime, facilitate capacity planning, improve energy utilization, and drive efficiency. With the best quality, best technical support and most patents, Server Technology products provide uncompromising reliability, innovation, and value for the datacenter. Only with Server Technology will customers Stay Powered, Be Supported and Get Ahead. www.servertech.com

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www.netapp.com/us/solutions/flexpod/index.aspx

www.vce.com

www.simplivity.com

www.nutanix.com

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