SCALE

The Cost of Hyperconverged Infrastructure

Hyperconvergence / IT Leadership

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The widespread
trend of
enterprises
moving to the
cloud not only
enabled greater
levels of
efficiency within
data centers, but
changed the way
IT services are
delivered. Major
influencers are
regarding the
shift as a revolution in enterprise IT, and one of the leading cloud-
enablers is hyper-converged infrastructure. With the three data
center subsystems no longer separated, hyper-convergence opens up
a newfound internal dialogue and offers **more opportunities to run
an ultra-efficient IT environment**. Industry analysts have estimated
that new hyper-converged technologies are already yielding annual
discounted benefits worth millions, and significantly increasing ROI.

> *In this article, we will discuss the differences between the total cost of ownership (TCO) associated with legacy data centers and the TCO or total cost of hyperconverged infrastructure. By discussing and investigating the capital and operational expenses involved in each environment, we will demonstrate just how hyper-convergence can aid in efficiency.*

The Legacy Data Center Challenge

When enterprise IT organizations purchase SAN storage, it's difficult to predict how much capacity will be required three to five years down the line. Trying to work out the correct capacity to sufficiently meet your requirements for the prospective future is no easy feat, and includes high chances of over/under buying. According to a study by Wikibon, extending your capacity may cost you 54% of actually buying a new storage array. The implications of investing in an array mean that it is preferable to acquire more capacity than is needed in the first place. However, over-buying to leave room to grow eventually leaves a large amount of capacity unutilized, not to mention that all of the excess capacity still requires rack space, power, cooling facilities, and more, ultimately increasing the TCO and significantly impacting data center ROI. CIOs understand the impact that extra storage has on costs. For example when it comes to VDIs, as a Gartner analyst put it, "We've seen some crazy numbers at Gartner, upwards of $1,000 per desktop for storage alone!"

Learn more about how hyper-converged infrastructure has influenced data center life cycles.

Obviously, you will find the same over-buying phenomenon when it comes to compute subsystems, not to mention wasted rigid idle

infrastructure islands. By using Moore's law to estimate how your infrastructure will look in five years, you will find that IT will be facing a completely different reality in regards to hardware, with significantly higher VM densities per node. Every year, we will be able to squeeze more and more virtual machines into a physical one, but will you be able to enjoy these technological advancements down the line? Or will you be stuck with outdated hardware that still needs to show ROI?

How Can Hyperconvergence Impact Data Center TCO?

Today, enterprise IT managers and business decision makers are looking for new ways to enhance data centers, and Hyperconvergence might just be the leading solution. In this section, we will examine both the CAPEX and OPEX aspects of hyper-converged infrastructure costs.

CAPEX: IT Infrastructure Investments

Hyper-converged based software defined data centers (SDDC) should help you leverage old and heterogeneous hardware capacity. They allow you to effectively utilize existing hardware and eliminate traditional hardware procurement risks, enabling you to purchase commodity cost-effective hardware all the while. In addition, physical resources can be automatically allocated according to the types of workloads that are running (VMs and containers), their behavior and criticality level, which transparently ensures optimal resource utilization. Moreover, technologies such as memory duplication and compression can be used to enhance the utilization levels of available resources. The immediate result is increased resource capacity without having to purchase additional hardware.

The costs of infrastructure are divided into three elements: **hardware**, **power and facilities,** and **software licensing**. According to our research, hyper-convergence impacts hardware investments the most, and reduces costs by around 30%. Overall, we estimate that hyper-convergence related cost reductions amount to between 30%-50%, depending on your industry and use case.

OPEX: Maintenance, Protection and Business Flexibility

Another huge advantage of Hyper-converged based SDDCs is the option to leverage APIs, which reduces the amount of admin work required and removes the need for specific expertise to manage each of the subsystems separately. With flexible on-demand provisioning via APIs, IT organizations can practice DevOps methodologies and orchestrate bulk amounts of resources easily, without the need to allocate physical resources and deploy workloads manually. This aids in reducing the number of team members involved in integration and delivery processes as well as the amount of time needed for each release. Another main efficiency factor is the fact that hyper-converged infrastructure can plug and play resources that are automatically attached to an existing pool of resources. And last but not least, this intelligent infrastructure have an inherent system robustness that includes hyper-converged self healing mechanisms that ensure out-of-the-box resilience, reducing downtime and performance degradations.

The costs of on-going operations are comprised of factors such as invested **time and effort**, **the need (or lack thereof) for dedicated experts**, and the **cost of downtime**. While these factors are not simple to calculate, after researching, it seems like data center deployment and maintenance costs have been reduced by 50%-70%, and there has been minimal downtime over the past year.

Calculating the savings of hyperconverged Infrastructure. An Example

Take a mid-sized organization, for example, with a few thousand employees running 200 virtual machines. Say CAPEX is around $3.6M for three years. Seeing as organizations generally enjoy 30% lower costs after implementing a hyper-converged solution, savings for this organization would translate to $1.08M over three years. Similarly, we can estimate OPEX at around $1.5M over three years. Considering the 50% reduction in OPEX costs, the organization in our example would save at least $750K over three years. **Overall savings come to be at least 36%** (or for this specific example, $1.83M), which is what every IT leader is striving to achieve.

TCO over 3 years - before and after hyper-convergence implementation (in millions)

	Before	After	Savings $	Savings %
CAPEX				
Compute, storage & network hardware	1.8	1.08	0.72	40%
Software licensing costs	1.08	0.864	0.216	20%
Power and other facilities	0.72	0.576	0.144	20%
	3.6	2.52	1.08	30%
OPEX				
IT team time/efforts	1.5	0.75	0.75	50%
Downtime costs*				
Overall	**5.1**	**3.27**	**1.83**	**36%**

* Note that we omitted the cost of previous down times.

Note: The information and estimates below are based on IDC and Gartner analysts' recent studies.

That's Not All

Contrary to legacy data centers, the TCO of modern IT systems is not simply defined by data center efficiency over time. In the modern world of IT, CIOs are expected to shift their states of mind and infrastructure from being costly to revenue generating. By enabling fast delivery with DevOps, and a system that can grow on-demand, revenue-generating infrastructure can become a reality. And by utilizing modern IT to effectively increase delivery, reduce expenditure, and accelerate innovation, your company can gain a real competitive advantage, translating into more customers and higher revenues. It is important to remember, that your IT operations success relies on your ability to quickly adjust at any point in time to fit the needs of your customers and end-users.
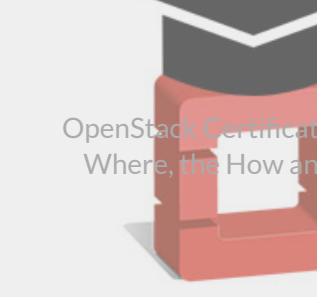
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