Hyperscale Data Centers: Market Shares, Strategies, and Forecasts, Worldwide, 2017 to 2023

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Abstracts

The 2017 study has 846 pages, 320 tables and figures. Worldwide hyperscale data center markets implement cloud computing with shared resource and foolproof security systems that protect the integrity of corporate data. Cloud data centers are poised to achieve explosive growth as they replace enterprise web server farms with cloud computing and with cloud 2.0 automated process computing. The implementation of secure large computing capability inside data center buildings provides economies of scale not matched by current state of the art enterprise data center standalone server technology.

Building size cloud 2.0 computer implementations feature simplicity of design achievable only with scale. These data centers implement cloud 2.0 in a move that works better than much of the current cloud computing. The cloud 2.0 data centers have been reduced to two types of components, an ASIC server: single chip servers and a network based on a matching ASIC switch. Data centers are implemented with a software controller for that ASIC server and switch infrastructure.

The major driving factors for Cloud 2.0 mega data center market are cost benefit, growing colocation services, need for data consolidation, and cloud. Amazon (AWS), Microsoft, Google, and Facebook data centers are in a class by themselves, they have functioning fully automatic, self-healing, networked mega datacenters that operate at fiber optic speeds to create a fabric that can access any node in any particular data center because there are multiple pathways to every node. In this manner, they automate applications integration for any data in the mega data center.

Cloud 2.0 mega data centers are different from ordinary cloud computing. Mega datacenter networks deliver unprecedented speed at the scale of entire buildings. They are built for modularity. They are constantly upgraded to meet the insatiable bandwidth demands of the latest generation of servers. They are managed for availability.

“The mega data centers have stepped in to do the job of automated process in the data

center, increasing compute capacity efficiently by simplifying the processing task into two simple component parts that can scale on demand. The added benefit of automated application integration brings massive savings to the IT budget, replacing manual process for application integration."

The only way to realign enterprise data center cost structures is to automate infrastructure management and orchestration. Mega data centers automate server and connectivity management. Cisco UCS Director illustrates software that automates everything beyond. Cisco UCS automates switching and storage, along with hypervisor, operating system, and virtual machine provisioning.

As IT relies more on virtualization and cloud mega data center computing, the physical infrastructure is flexible and agile enough to support the virtual infrastructure. Comprehensive infrastructure management and orchestration is essential. The enterprise data centers and many cloud infrastructure operations all have similar problems of being mired in administrative expense. This presents a problem for those tasked with running companies.

The Internet has grown by a factor of 100 over the past 10 years. To accommodate that growth, hyperscale data centers have evolved to provide processing at scale, known as cloud computing. Facebook for one, has increased the corporate data center compute capacity by a factor of 1,000. To meet future demands on the Internet over the next 10 years, the company needs to increase capacity by the same amount again. Nobody really knows how to get there.

Everyone should know by now that the enterprise data center is dead. It will no longer exist in three years, that is the time it takes servers to become outdated and need replacement. In that timeframe, enterprises will migrate workload from the core enterprise servers to the large data center that can provide processing at half the cost of current processing. Maybe this forecast is too aggressive, but probably not. The mainframe stays around as detailed in a different report.

The choices for migration are to regular cloud data centers that remain mired in manual process and lack of automation vs. cloud 2.0 mega data centers that implement automated process inside a building that has scale.

The hesitation that companies have had in migrating to the cloud have been concerns about security and protecting the privacy of the corporate data, protecting the crown jewels of the company so to speak. But the security in a shared data center can be as good or even better than security in an enterprise data center. The large independent players profiled in this report have found ways to protect their clients and have very sophisticated systems in place for serving their clients. At this point security concerns are a myth. The much greater risk is that a competitor will be able to cut operating costs by a half or even 500% by moving to cloud data center configurations, providing insurmountable competitive advantage.

The commercial data center providers are sophisticated and reliable. The good ones have been around for years, building systems that work in shared environments that are able to protect the integrity of each client's data. At this point a good independent analyst is the best source for judging what cloud environments best suit a client. This study outlines the inevitability of migrating to cloud. Enterprise data centers are in melt down mode.

When technology markets move, they move very quickly and this cloud data center market has been artificially protected by incumbent vendors scaring existing customers about security vulnerabilities, so when the air is let out of the myth, the existing IT culture, it is likely to collapse.

As the team wrote optical transceiver study, interviews revealed a startling observation: "The linear data center is outdated, it has become a bottleneck in the era of the digital economy, the quantity of data has outpaced the ability of the data center to manage and the traditional data center has become a bottleneck. Have you seen what is going on in the mega data centers?" The mega data centers are different from cloud computing and different from the enterprise linear computing data centers, the mega data centers are handling data at the speed of light. This represents a huge change in computing going forward, virtually all the existing data centers are obsolete. This study and the one for CEOs addresses these issues.

As we build data centers with the capacity to move data inside at 400 GB per second, more data can be moved around. More analysis can be done, more insight can be gained, more alerts can trigger robotic response.

The value of automated process to business has been clear since the inception of computing. Recently, automated process has taken a sudden leap forward. Many companies had been stuck in their enterprise data center spending patterns encompassing manual process. In the enterprise data center the vast majority of IT administrative expenditures are for maintenance rather than for addressing the long-term strategic initiatives.

Companies that remained in the manual administrative spending on the data center mode including IBM and Hewlett Packard and most of their customers failed to grow at the same pace as the rapid growth tech companies, Google, Facebook, Amazon, and Microsoft.

Business growth depends on technology spending that is intelligent, not on manual labor spending. The manual labor is always slow and error prone, spending on manual process is counterproductive vs automation spending. So many IT processes have been manual, tedious, and error prone that they have held the company back relative to the competition. Mega data centers get rid of that problem. The companies that invested in mega data centers and automated process for the data centers have had astounding growth, while the companies stuck with ordinary data centers are mired in slow growth

mode.
Topology, technology and design favor building a digital business solutions. Vendors offer colocation-based, programmable networking centers provide data center interconnect fabric. A fabric allows dynamic interconnection between enterprise peers, cloud providers, communications providers and a growing marketplace of service providers.
The Hyperscale Data Centers: market size at $86.9.7 million in 2016 is anticipated to be $359.7 billion in 2023. The market has astoundingly rapid growth for a market that really is not yet well defined. The increasing scope of applications across different industries, manufacturing, medical, retail, game, and automotive, all industries really, is expected to drive demand over the forecast period to these unprecedented levels, reaching into the trillion-dollar market arenas soon.
The hyperscale data centers are position to manage the explosion in web data, including data from IoT technology that is in the nascent stage with a huge growth potential, and has attracted large investments contributing to the industry growth.

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