

2016 Datacenter Technology Trends

Widespread change will be disrupting the datacenter industry during 2016 – everything from software and services to equipment suppliers.

First, there will likely be fewer enterprise datacenters in 2016 and beyond, as many smaller and regional facilities consolidate into centralized ‘premium’ sites. And even as capacity is outsourced to public cloud datacenters, enterprises will increasingly turn to colocation and hosting providers.

There will also be rising interest in prefabricated modular datacenters (PFMs) across all sectors of the market. (The trend towards PFMs was covered in a recent 451 Alliance Global Infrastructure Trends newsletter article: [Prefabricated Datacenters on the Rise.](#))

Regardless of design, during 2016 datacenters will become far more automated within on-premises, off-premises, and hybrid environments. And as more and more operators realize the need for integrated management tools, it will drive up demand for datacenter infrastructure management (DCIM) software as well.

This report examines five key trends we see shaping datacenter technologies for the coming year:

- **DCIM Will Move Further Up the IT Stack**
- **Hyperscales Will Disrupt the Status Quo**
- **Cloud Will Drive Technical and Business Change**
- **Prefabricated Datacenters Will Come of Age**
- **Datacenters Will Evolve from Consumers to Active Energy Players**

Trend: DCIM Will Move Further Up the IT Stack

Implication: *Datacenter Infrastructure Management software (DCIM) is being extended up the IT stack to connect IT applications and processes with underlying physical resources (space, power, cooling).*

Deployment of DCIM systems was initially slower than analysts had expected. There were many reasons for this – not least that DCIM is both a set of applications and a platform.

Platforms do not enjoy strong adoption in tough times without strong applications to drive demand. While there is no ‘killer app’ yet in datacenter management, there is a growing recognition that these applications are valuable and worthy of investment.

Datacenter operators are also exploring how they can achieve a better ROI through the adoption of datacenter service optimization (DCSO). This involves integrating DCIM data with IT and other management systems – thereby improving customer service and efficiency.

By aligning the supply of datacenter power/cooling and space (DCIM) with the demand from IT (IT management tools), operators are able to become more competitive. They can also

calculate the 'true' cost of running apps in their datacenters and compare it against outsourcing options. This is critical for best-execution venue strategies, which are becoming more prevalent as the cost of public cloud services falls.

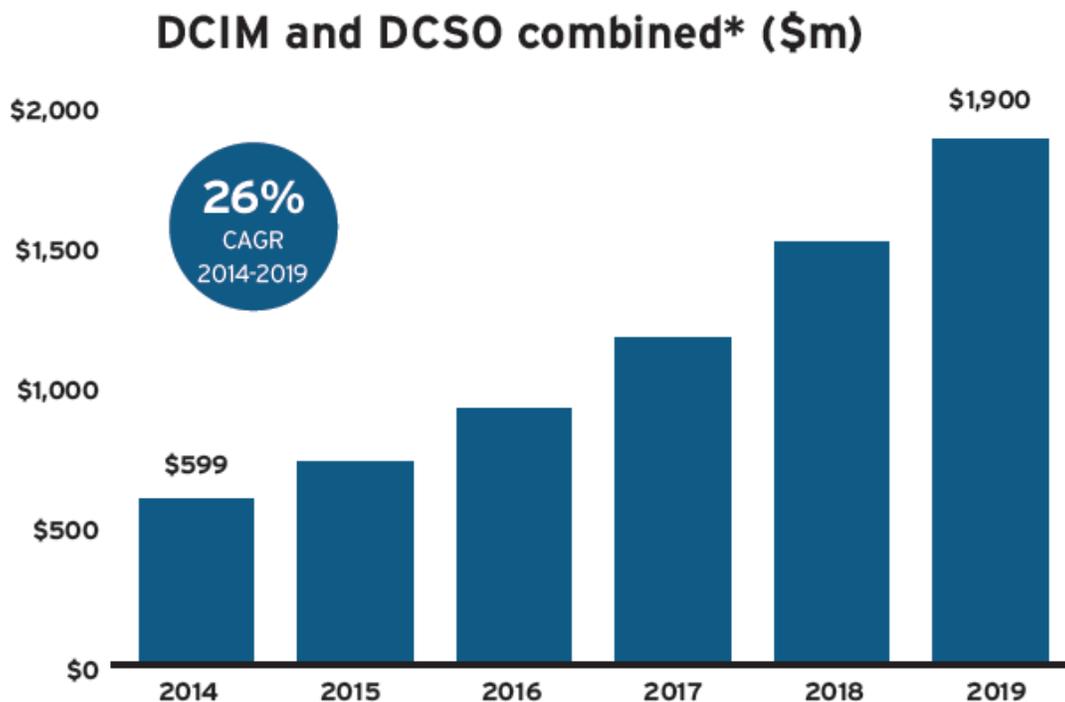
Both DCIM and IT management software suppliers are formulating their strategies for early DCSO leadership positions.

Leading DCIM suppliers have partnered with IT service management (ITSM) and virtual machine (VM) management tool suppliers to enable integration. This includes large datacenter equipment suppliers such as Emerson Network Power, Schneider Electric, Panduit, and CommScope (iTRACS), as well as DCIM pure-plays such as Nlyte Software, Tier44, and others.

The use of integrated management software as the datacenter's central operating system – as well as the foundation of best-execution venue decisions – makes DCSO strategically important.

Global Datacenter Management Software Market Forecast

Source: 451 Research's Market Monitor: Datacenter Management Software, September 2015



Trend: Hyperscales Will Disrupt Suppliers' Status Quo

Implication: Hyperscale datacenter operators are demanding alternative datacenter designs and technologies to exploit economies of scale and drive cost efficiencies. This is affecting significant change among leading datacenter tech suppliers, who are moving from mostly mass-scale (for enterprises) to more customized engineered-to-order projects and product development.

Large Internet and cloud service providers have made dramatic improvements in the cost efficiency of their datacenters, and are aggressively pursuing all types of enterprise (and consumer) workloads.

Three of the largest-scale Internet firms – Apple, Google and Microsoft – continue to invest heavily in building out mega-datacenters globally, with capital spending at the three companies over the past 10 quarters totaling more than \$61bn, according to public filings. There is also large-scale building by the likes of Facebook, Digital Realty, Rackspace, and others.

Broadly speaking, there are two main camps of hyperscale datacenters:

First are the Internet and cloud behemoths that are seeking to simplify, standardize, and strip out as many layers of cost as possible – including physical infrastructure redundancies (they favor software-based redundancies instead).

The other camp includes multi-tenant datacenters that also build, buy and design on a massive scale. While they embrace certain ‘alternative’ approaches (e.g. medium-voltage power distribution and ambient cooling), they are more traditional in other ways – including building for high levels of physical infrastructure redundancy.

These Internet and cloud service provider behemoths have very different datacenter requirements than enterprise and other commercial operators. Because of this, the hyperscales are forcing change among datacenter equipment suppliers.

In particular, R&D pipelines are almost unrecognizable from a few years ago as big suppliers – Schneider Electric, Emerson Network Power, Eaton, ABB, CommScope, Panduit and others – move from enterprise mass scale to hyperscale customized and engineered-to-order products.

Additionally, new business units are being set up to support hyperscale projects, which typically have very short lead times.

The winners here will be large suppliers that have global reach and capabilities and the resources to buy or build new technologies.

The losers will be suppliers that lack the scale, global presence and resources to rapidly innovate to meet the changing demands of hyperscale datacenters.

Trend: Cloud Will Drive Technical and Business Change

Implication: *Cloud computing has been driving major changes across the entire IT industry for nearly a decade, and its impact has accelerated with every passing quarter. For some industry players, the impact of cloud and the growing role of hyperscale operators are severe, while others see considerable opportunity, helped by buoyant demand.*

The impact of cloud computing on the datacenter industry is both deep and wide. 451 Research’s view is that the appetite for enterprise ownership of datacenters is waning, and more work will go to colocation, hosting and cloud companies, with all these categories of operators benefiting.

This will mean more IT and datacenters in proportionately fewer hands (but there will still be many of them). There will also be a greater need for management tools and services; a stronger overall commitment to high standards; and greater opportunity to deploy innovative designs and technology.

Resiliency in the Cloud

From top to bottom, both enterprise and commercial datacenters are designed and operated to achieve high availability. This means generators, redundant power paths, uninterruptible power supplies, and mirroring of computing and databases.

However, developments in virtualization, cloud computing, and power and cooling mean that operators are beginning to design datacenters with less overhead, less headroom and less redundancy.

As physical infrastructure is displaced, we expect more datacenters will turn to software, networking and more resilient IT – saving substantial sums on capex and opex.

But the move toward cloud resiliency will not be all or nothing: with greater use of prefabrication and modularity in datacenter design, it is becoming easier and cheaper to build multi-tier datacenters. Many will have low levels of redundancy in one place, and higher levels in another – Facebook’s datacenter in Sweden is an example.

The extent of this trend (cloud-based resiliency) and the speed at which it will be developed and adopted is difficult to assess.

Some of the technology is immature, and the risks and the cost calculations are complex and rapidly changing. Certainly, the IT involved is far from simple: Multiple copies of data must be stored at logically and geographically separate locations for retrieval in the event of failures.

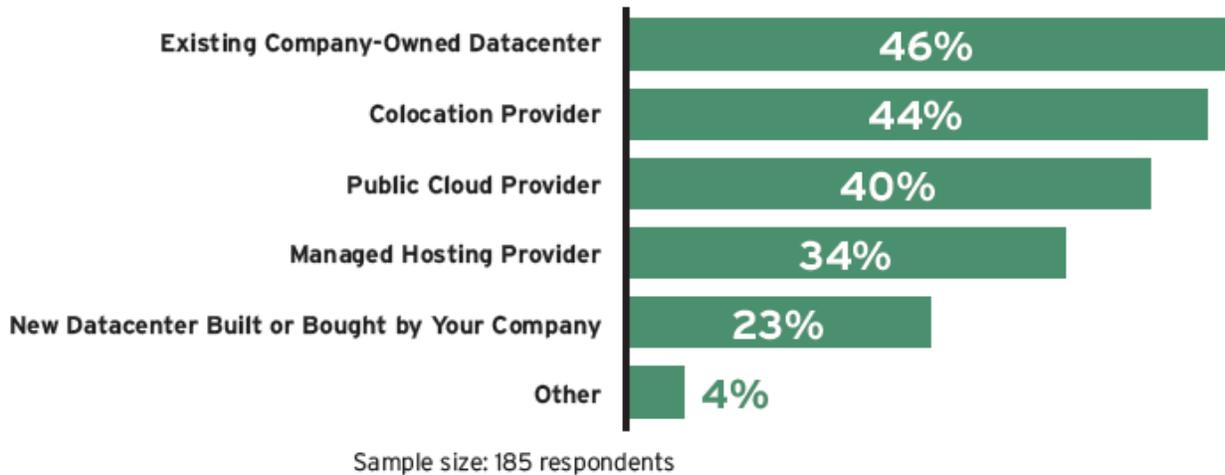
For many, the safe course for now will be to continue designing as much redundancy as possible at the core power, cooling, and network level. But 2016 will see more and more moves toward greater use of cloud for backup and resiliency – even if it’s not for mission-critical low-recovery-time systems.

Examples of progress in this area include:

- The use of availability zones by Amazon, Google, and Microsoft, among others, to provide redundancy and synchronous/asynchronous replication
- Support for cloud-based backup and disaster recovery at a number of service providers
- Emerging technology to replicate and manage distributed applications and data from companies such as OneCloud, CloudVelox, CloudEndure and others

According to a recent 451 report, the cloud-based backup and recovery market is expected to surge at a 22% CAGR through 2019, with revenues exceeding \$1bn in 2017.

Companies Evaluating Disaster Recovery Strategies - Anticipated Site or Service Type



The full *2016 Trends in Datacenter Technologies* report examines each of the above trends in-depth, along with two other datacenter trends:

- **Prefabricated Datacenters Will Come of Age**
- **Datacenters Will Evolve from Consumers to Active Energy Players**

[You can access the complete 451 Research report here.](#)

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