

## Global Digital Infrastructure Trends

*Findings From the 451 Alliance*

November 20, 2015

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### **Quick Snapshot: Today's Newsletter**

**Prefab Datacenters on the Rise.** Whether you're a small enterprise or hyperscale owner, prefabricated modular datacenters are becoming the benchmark to beat. New, innovative designs boast greater speed and agility than traditional approaches.

**'Pay Us or Else.'** Today's ransom-based cyberattacks are a distinct step back in sophistication from earlier 'ransomware' attacks. This is good news for potential targets, as there's little new here that cannot be prevented with available technology.

**All Business Apps to SaaS? Not so Fast.** 451 Research surveys find that three in five business applications continue to run on-premises, while only 10% run on SaaS. Thus, while SaaS is an increasingly popular alternative, not all applications should move to SaaS.

**Demand for Latest iPhones Sparks Smart Phone Buying.** Following the launch of the iPhone 6S and 6S Plus, Apple is driving much of the industry's growth – with two in three respondents who plan on buying a smart phone in the next 90 days saying they'll get an iPhone.

### I. Prefab Datacenters on the Rise

The prefabricated modular datacenter (PFM) sector has evolved considerably over the past year, with a number of new vendors entering the market amid a rapid expansion of product portfolios.

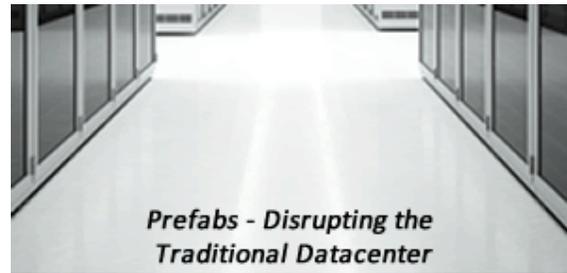
As a result, PFM datacenters are now more attractive to datacenter operators that may have been hesitant to adopt them in the past.

While overall sales may be growing more slowly than some anticipated (this is the most conservative layer of the digital infrastructure stack), the overall outlook remains bright: PFM datacenters make good business sense.



## The Advantages of Prefab

Until recently, prefabricated modular datacenters were widely considered niche tools for odd jobs. But rapidly evolving PFM designs are providing new options with greater speed, predictability and agility than traditional approaches.



Reducing uncertainty is the strongest motivating force driving PFM adoption. Building an efficient yet mission-critical datacenter facility is a high-stakes undertaking that can be subject to cost overruns and delays.

PFMs make the design and building of advanced facilities easier and more predictable than traditional builds. Datacenter operators are better able to manage their capacity while reacting quickly to changing business needs.

Although the cost of PFM capacity remains a primary concern, more decision-makers are coming to understand the benefits and adoption continues to grow. Moreover, it is widely accepted that the ease of adding capacity is a key advantage of PFM datacenters.

Other key advantages include:

**Reduced risk.** Much of the complexity of designing and building a PFM facility is assumed by the manufacturer. This promotes accountability and predictability of cost and performance for PFMs.

**Building only what is needed.** PFM enables a better use of capital and a means of staying flexible in response to business needs. By building only what's needed for the short term – e.g., the next 6-12 months – organizations are able to defer capital outlays and keep their options open. And should capacity requirements change (either volume of capacity or timing) enterprises are able to respond 'on demand.'

**Greater flexibility.** With PFMs, you also have the flexibility to build different configurations for different parts of the IT infrastructure (i.e., critical power density, cooling and resiliency level requirements can vary greatly), promoting greater energy efficiency and higher utilization.

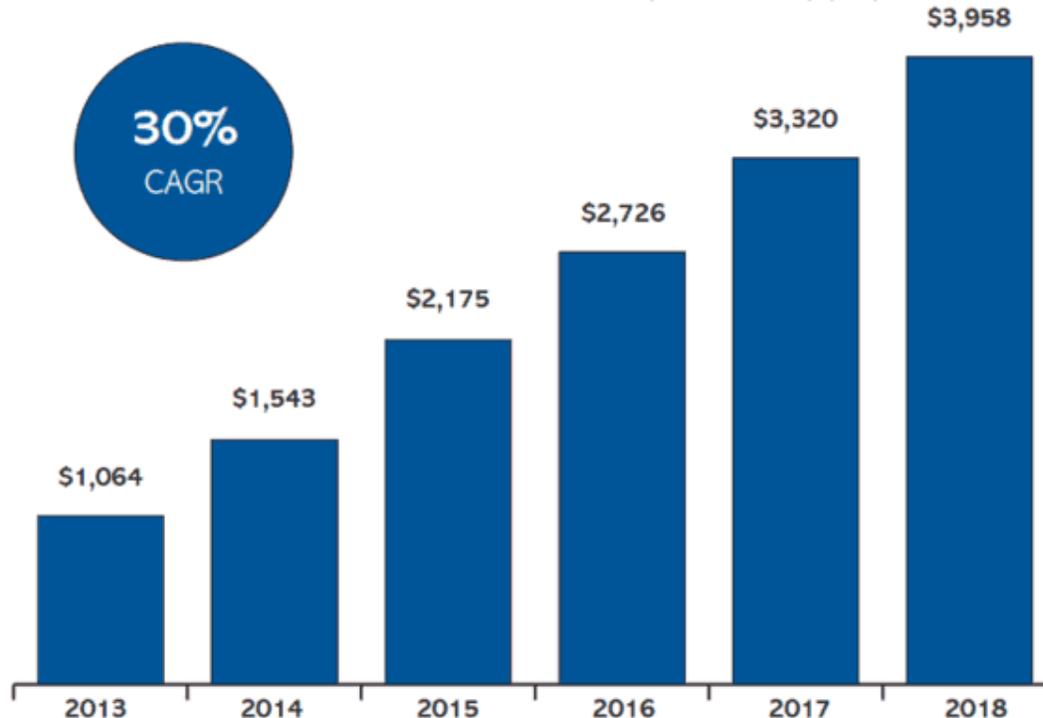
**Performance** is a major driver for PFMs. Precision manufacturing and designs for optimal airflow can deliver significant savings in energy and water usage. Some cooling systems are available exclusively to PFM facilities – and annualized site power usage effectiveness (PUE) of 1.2 or better can be achieved, which seemed impossible for all but the hyperscales just a few years ago.

Today, virtually any datacenter operator can realize such energy efficiencies with PFMs – without investing in designing and building large facilities to make it economical.

## PFMs on the Rise

Interest in PFM infrastructure continues to grow, and the market appears to have a long way to run. 451 Research currently forecasts the market for PFM products to reach \$4bn by 2018 – up from \$1.5bn in 2014.

FIGURE 1: AGGREGATE PFM REVENUE FORECAST (2013-2018) (\$M)



Source: 451 Research, 2015

Today, PFM datacenters are being adopted within most industry sectors – including multi-tenant datacenter providers and hyperscales.

Not surprisingly, the interest in PFMs has led to a supplier-side boom in recent years. We expect that the number of active PFM vendors pursuing international expansion will continue to grow. Technology innovation will also accelerate.

Several recent examples include:

- WhiteSpace is a new UK-based startup seeking to differentiate itself through cost-guaranteed, affordable units of up to 250kW.
- CommScope, a large cabling and communications supplier, and iFortress, a high-security PFM specialist, have stepped up their international PFM marketing efforts.
- Baselayer, the technology spinoff of colocation provider IO, has rapidly expanded its PFM portfolio in 2015.
- Civil engineering giant CH2M recently won a significant PFM datacenter project exploiting its airflow optimized modular design.

### Delivering Prefab Infrastructure

Datacenter builders and operators differ in their willingness to tackle datacenter projects on their own. Some – especially large commercial datacenter operators – possess the skill sets and scale to develop customized datacenters. Others want the PFM vendor to provide a turnkey facility that is prefabbed end to end.

PFM vendors that want to maximize their market coverage need to accommodate both types of customers. This means developing trusted partnerships and locally configured products, but on a global scale.

451 Research will continue to track the evolution of PFM datacenters, which are rapidly becoming the benchmark to beat for all use cases, from SMEs to hyperscale operators.

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## II. Ransomware: Give Us Your Website or Your Bitcoin

'Ransomware' first became the subject of scare stories in the media when consumers and businesses suddenly found themselves paying ransom to cyber attackers in order to access their data.

In 2014, the malicious Cryptolocker hit nearly a half million consumers and businesses with an infection that encrypted their files. Victims were given 72 hours to pay a ransom of \$400, €400, or an equivalent in virtual Bitcoin currency.



***Are You Ready to Pay Ransom?***

But today, that ransomware threat has evolved into something much less sophisticated: DDoS for Bitcoin (DD4BC).

These latest distributed denial of service (DDoS) attacks range from 400-500 Gbps in size. Prior to an attack, the DD4BC group sends a message demanding payment of 40 Bitcoin (around \$12,000 at the time of writing) or a DDoS attack will be launched.

### **A Step Backwards**

These attacks are a step backwards in terms of sophistication. They are the online equivalent of paying 'protection racket' money – you pay to prevent them from hurting you (recently technology firms Novatech, Aria Technology and Scan all had their websites taken offline due to these attacks).

While DD4BC attackers demand payment to prevent an attack from being launched against you, upon paying, there's no guarantee that they won't see you as an easy target and threaten you over and over again.

While DD4BC is a new development, DDoS has been a common attack method for several years – and there is little new about these ransom attacks that cannot be prevented with available technology.

### **Return My Site Alive & Uninjured**

The DDoS for Bitcoin attacks haven't demonstrated much sophistication, and right now, it appears that only websites are the target. In the future, attackers may target Web applications or even networks, but it's questionable whether an attacker could see the benefit in an attack for a ransom payment that may never come.

A ThreatTrack survey on cyber extortion found 70% of IT professionals queried would not support negotiating with cyber criminals. That said, 85% believe other organizations *have* negotiated with and/or paid cybercriminals for the return of their data.

### **State of the Anti-DDoS Market**

Regardless of whether attacks target websites, web applications or networks, most of today's DDoS techniques are well known. Moreover, technology exists to mitigate most of these attacks, though it hasn't been universally implemented.

Cost and a better understanding of the options available are the biggest barriers to effective anti-DDoS deployment.

Cloud-based and hybrid approaches (mix of on-premises and cloud hosted) can prevent these attacks from succeeding, even though adoption to date has been slow (data from a recent 451 Research study shows less than half of enterprises are spending budget on anti-DDoS tools.) However, as more enterprises deploy anti-DDoS technology going forward, they will become far better able to successfully withstand DDOS ransom attacks.

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### III. On-Premises Persists Despite Push to Cloud

What factors should buyers consider when comparing SaaS vs. on-premises applications?

Software as a Service (SaaS) is an increasingly popular alternative to running applications on-premises, and it's a trend that will only continue to grow – but not all applications today should move to SaaS.

The business case will differ depending on the type of application, whether it is a new or replacement application, and on an analysis of contrasting costs.

Until recently, SaaS and cloud were seen as the only options worth considering. And those that preferred on-premises deployments were viewed as Luddites. But recent 451 Alliance data shows that on-premises remains the right option for many enterprises, and that a more mature discussion is emerging between potential SaaS buyers and sellers.

Today the conversation has become more nuanced and weighs the merits of each option. This is encouraging as more transparency in the true costs, strengths and weaknesses of SaaS is long overdue.

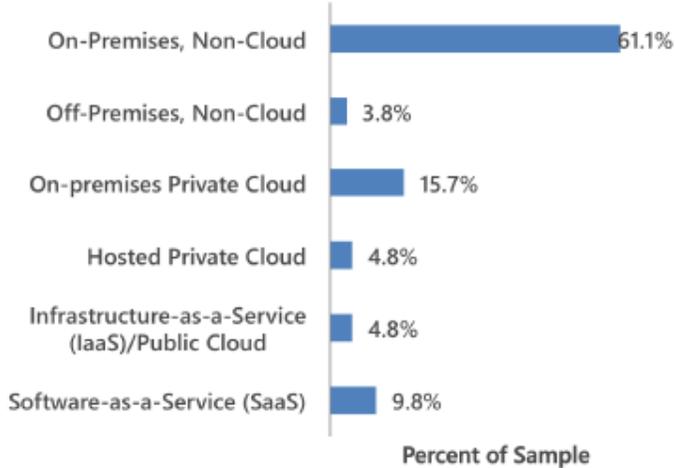
#### **Moving Applications to the Cloud**

Currently, cloud-based business applications have huge momentum. There is an industry-wide assumption that eventually all applications will run in the cloud and be delivered as SaaS sometime in the future.

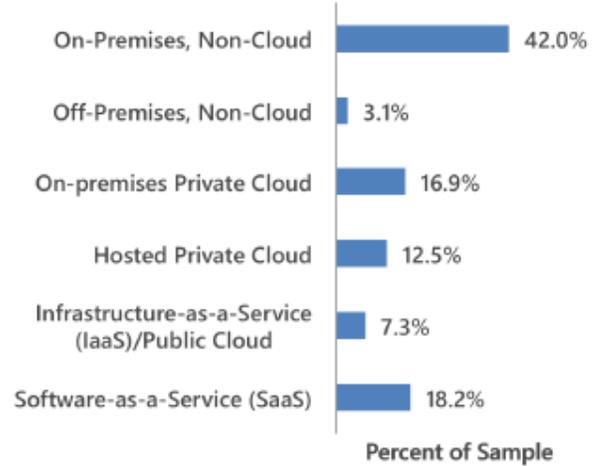
But today that is still not the case. Most applications continue to run on-premises, and 451 Research survey data confirms that moving to the cloud is going at a slower pace than some might realize.

451 Research surveys have found that three in five business applications (61%) continue to run on-premises, while only 10% run on SaaS. While the SaaS percentage is expected to grow to 18.2% in two years' time – which is a big jump and an impressive growth rate – 42% of applications will continue to run on-premises.

## Current



## Future (2017)



Thus, even though there is momentum for SaaS it still has a long way to go – and buyers looking to make the move ought to consider the business case carefully.

Each enterprise buyer needs to look at his or her own unique requirements and situations. Importantly, buyers should undertake a basic 10-year ‘total cost of ownership’ calculation before making any decision between SaaS and the on-premises version of a business application.

Moreover, while buyers certainly need to consider cost when comparing SaaS vs. on-premises, it’s not the only factor. There are other tradeoffs to consider.

### Top Cloud Inhibitors

When considering issues of SaaS vs. on-premises, it is important to think about the kinds of transactions being conducted by applications.

For example, there are reasons why an application like a CRM is more suited to SaaS than digital asset management (DAM). One transfers tiny amounts of data per change in record; the other can transfer gigabytes per transaction.

Though the following 451 Alliance survey data addresses cloud as a whole, not just SaaS, it provides an interesting snapshot of the current state of buyer concerns.

## Cloud Inhibitors Non-Cloud Respondents



*Please rate how much of an impact the following have on inhibiting your organization's use of cloud computing. Please use a 0-10 scale where '0' is "No Impact" and '10' is "Significant Impact".*

Security, sovereignty and compliance remain major worries. Pricing also rates highly here, contradicting the belief that everyone is buying into cloud because it is somehow, by default, cheaper.

Beyond this, many buyers are also looking at the amount of change management a shift requires on top of the cost of moving to cloud.

### **Buyers Choice**

As major software vendors like Oracle and SAP become more involved in the delivery of SaaS, this discussion will continue to progress. Essentially, these huge vendors can deliver the same application on-premises as well as on any cloud platform. The choice is left to the buyers.

Another key differentiator between SaaS and on-premises is that of customer service and support.

While on-premises vendors have a history of loving and leaving once a license deal is signed, subscription-based licensing requires developing a more lasting relationship. In short, SaaS vendors need to keep their customers engaged and happy over a longer period.

So there are many factors, application types, and deployment situations that buyers should consider when comparing SaaS vs. on-premises. It's seldom a black-and-white decision. Rather, it's a far more nuanced equation – and at present, not all applications should move to SaaS.

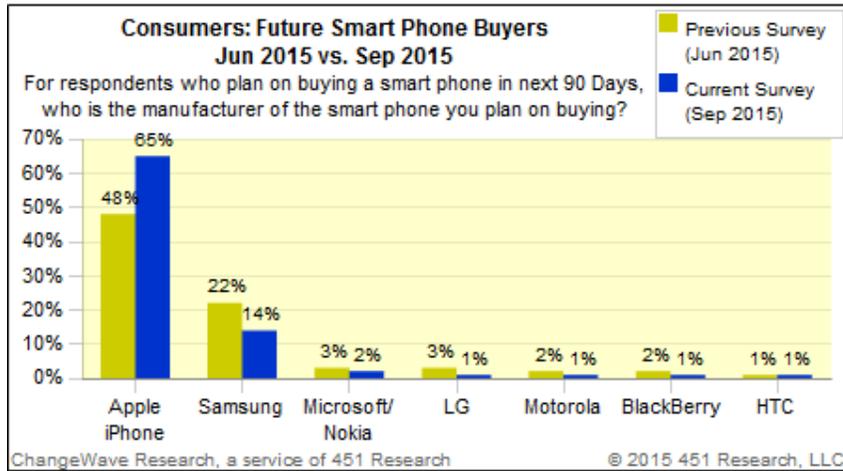
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## IV. Demand for Latest iPhones Sparks Smart Phone Buying

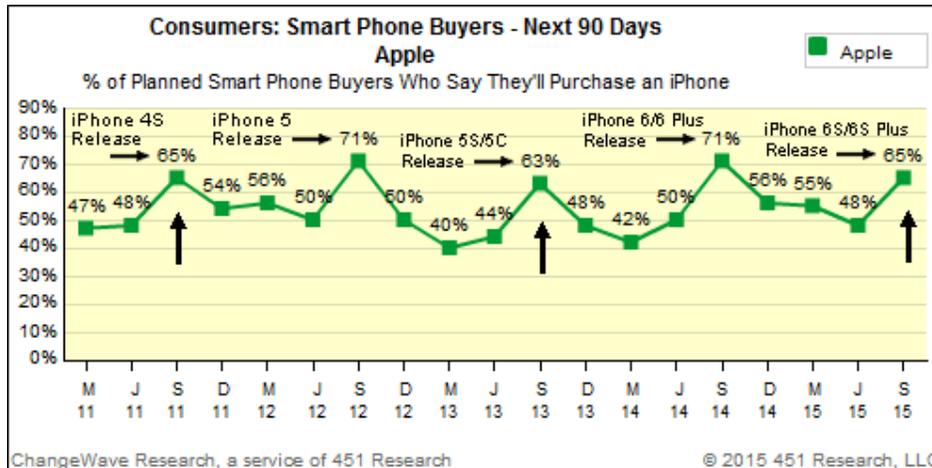
A 451 Research ChangeWave smart phone survey of 4,367 North American consumers, conducted just after the launch of the iPhone 6S and 6S Plus models, shows a jump in overall buying plans – driven by demand for the new iPhones.

The September survey showed an uptick in overall smart phone purchasing, with 17.3% of respondents saying they plan on buying a smart phone in the next 90 days.

**Competition Among Manufacturers.** Apple is driving much of the industry’s growth for the next 90 days, with two in three respondents (65%) who plan on buying a smart phone saying they’ll get an iPhone – a 17-pt leap from previously.



As the following chart shows, the leap in Apple planned buying is similar to the surges during the previous two interim iPhone model releases – which were up 19 pts for the iPhone 5S/5C and 17 pts for the iPhone 4S.

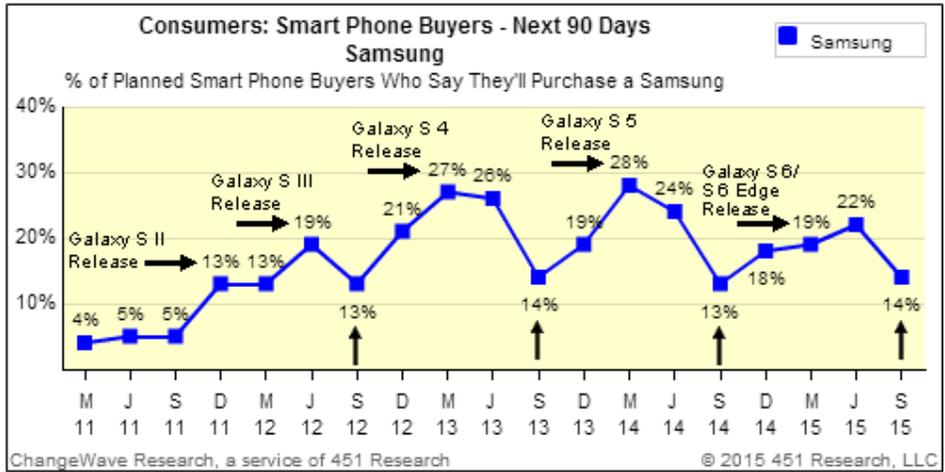


Currently, demand for the iPhone 6S (52%) dominates, with just over one-in-four iPhone planned purchasers (27%) saying they’ll get the 6S Plus.

While North America is a relatively mature market, these results do not factor in planned buying trends in other major markets outside the U.S. and Canada where there is significant growth potential.

**Samsung.** Apple’s biggest competitor is taking a hit this quarter. A total of 14% of planned buyers say they’ll purchase a Samsung smart phone – down 8 pts from June.

The decline mimics a temporary pattern seen in the previous three September surveys following new iPhone model releases.



Buyers planning to purchase Samsung Smart Phones were asked which model they're most interested in purchasing, and better than two in five (43%) say they'll get one of the S6 models – Galaxy S6 (22%), S6 Edge (11%) or S6 Edge+ (10%).

**Other Manufacturers.** There are no signs of momentum for other manufacturers. HTC (1%) is unchanged from previously. Microsoft/Nokia (2%), BlackBerry (1%) and Motorola (1%) are all down 1 pt, while LG (1%) is down 2 pts.

## V. Hot Tickets

Do you have something interesting to share with the 451 Global Digital Infrastructure Alliance? Good, because we're looking for the ideas and observations on the minds of our members.

Simply send us an email and tell us what's on your mind. It's that easy!  
[451Alliance@451Research.com](mailto:451Alliance@451Research.com)

All submissions play a role in our research program, and the ones that are ready for prime time will be highlighted in future editions of *Global Digital Infrastructure Trends*.

## VI. Give Us Your Feedback

We want to hear your questions, suggestions and comments about the 451 Alliance. Simply send us an email at:

[451Alliance@451Research.com](mailto:451Alliance@451Research.com).

We promise a quick reply.

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