

PUBLIC CLOUD GOES BIG ON SECURITY AND PERFORMANCE: ENTERPRISE



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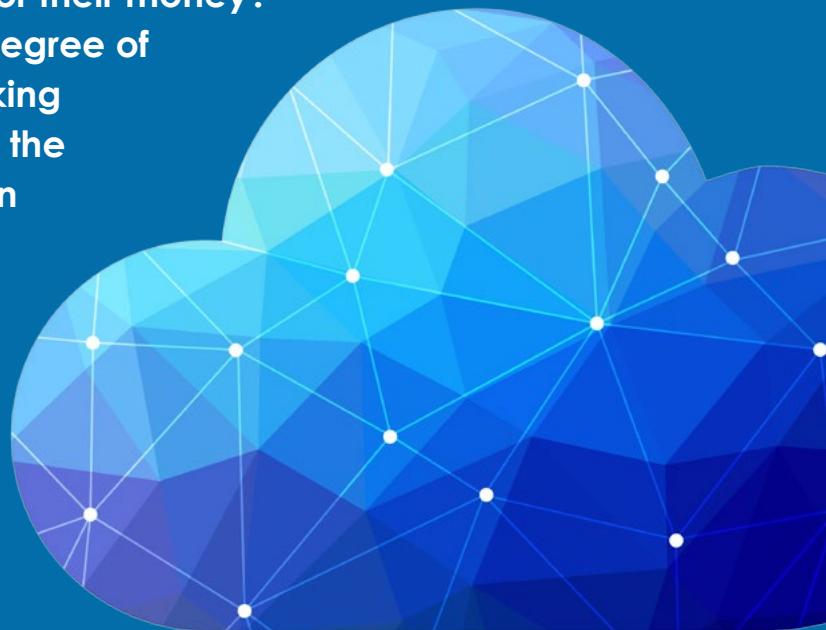
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Public Cloud is being adopted in a big way, but do most enterprises understand what they are getting for their money?

Cloud services vary widely in the degree of performance, security and networking available; failure to initially choose the right option for one's workloads can prove costly in both time and money. To protect against buyer's remorse, one must develop customized criteria for choosing a cloud provider based on workload requirements, supported technologies and level of support offered by cloud providers. For most, the right choice will center around a cloud that is reliable and built with proven technologies to support highly secure and available infrastructure.



ALL CLOUD SERVICES ARE NOT ALIKE

Very few cloud providers have built entirely new platforms and products; most have adapted existing architecture to rapidly scale and support multi tenancy. Few have the opportunity to start with a blank slate and build a service from the ground up based on best of breed cloud native technologies. It's critical to understand which solutions and platforms vendors offer and how deeply they can provide support. Areas to dig into:

- **Operating systems and templates**

Does your provider support both commercial and open source options? Nearly all cloud providers will support both but options might be limited. **Linux** distributions supported by most cloud include **SUSE, Redhat** and **Ubuntu**; other community variants like **Debian** and **CentOS** are harder to find. Ensure that your provider offers a library of OS templates useful to your enterprise.

- **Hypervisor support**

Virtualization is the foundation of public cloud services; aside from bare metal offerings, nearly every cloud server runs a hypervisor. The question to ask potential providers is not if they use **VMware vSphere** or **Microsoft Hyper-V** but what features, APIs and automation tools are offered to deliver better performance and agility for those

resources. For those enterprises wanting to extend their current on-premise applications to a cloud, finding a provider who supports your current virtualization tools is a must.

- **Container support**

Containers are the hottest topic in cloud services. They are lightweight, open standards based and provide an entire run-time environment for applications. They have the potential to move applications between environments and truly enable hybrid environments. Container technology is very new to most users and few providers actually provide containers as a service. When choosing a cloud provider, it's not necessary that they have a container service today, but must have plans to deploy them in the next 12-18 months.

- **Community driven cloud technologies**

Many users and providers have begun to invest time and money in community driven cloud platforms like Openstack and Apache Cloudstack. Development of features and functions are driven by the user community and will allow for more programmability and extensibility. As most enterprises do not have concrete requirements for these community driven cloud platforms, few providers offer commercial services built upon these technologies.

EVOLUTION OF CLOUD OFFERINGS

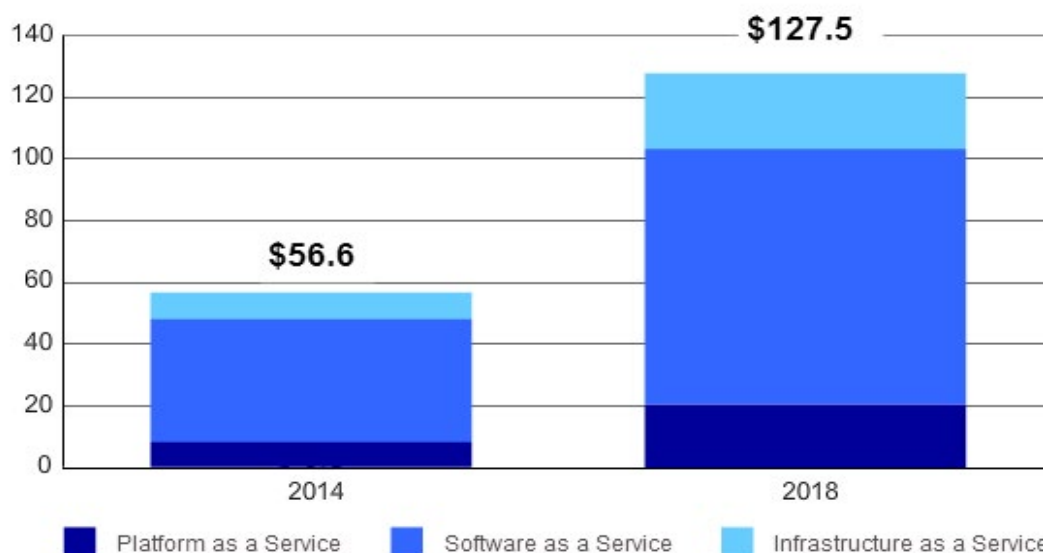
Cloud services are experiencing explosive growth; [Gartner Inc.](#) predicts that public cloud services will grow to a \$60 Billion market by 2017. [Structure Research](#) and [IDC](#) predict the market to grow even larger. The fuel to this market growth is the ability of cloud providers to morph their products to support customer needs. This agile mode of development is driven by several key trends:

- **Microservices architecture**

A new term to many, but the concept of Microservices has evolved from the popular development principle, **SOA (services**

oriented architecture). Microservices architecture refers to developing and deploying application clusters that are autonomous, modular and have a sole purpose. This allows developers to rapidly create, deploy and reuse each component as they are not tied to any specific application or platform. As cloud services becomes the realm of devops and architecture teams, the ability to fail fast and recover fast in the cloud is required. Cloud providers will need to meet the needs of the developers and build microservices support into their offerings.

Worldwide Public IT Cloud Services Spending by Segment (in \$ billion)



Source: <http://www.cloudcomputing-news.net/news/2014/nov/10/ready-or-not-the-mobile-cloud-era-awaits-you/>

- **Devops support**

Next to microservices, the biggest transformation hitting cloud services is the consumer. Way back in the early era of cloud (2008), cloud services were targeted at server administrators and promised more efficient utilization of hardware. At that period in time, that value proposition was good enough. Fast forward to today - developers and architects have begun to take over the operational aspect of cloud environments because IT couldn't move fast enough to meet their needs. Cloud offerings will begin to include more support for agile development and orchestration, as well as a move toward a "devops as a service" mentality.

- **Workload Portability**

A dream for most cloud adopters is the ability to avoid provider lock-in and have the ability to move workloads to any cloud provider. Most early use cases for cloud services revolved around high availability and bursting capacity to ensure applications did not fail under load.

Application portability is great in theory, but reality has proven that moving workloads between two different sets of infrastructures can be complicated. As most cloud providers fight to keep workloads on their own platform, enterprises must control their own destiny by developing applications on common frameworks, using industry leading migration tools and deploying private or hybrid networking connections to ensure high levels of security and performance.

- **Software Defined Networking/ Network Function virtualization**

One could argue that all the agility, modularity and scalability in a cloud services stack would not exist without virtualized networking. As infrastructure evolved from on-premise to virtual private servers to virtual machines, advancements in networking were a few steps behind. No longer is networking a bottleneck in cloud deployments, thanks to the evolution of SDN and NFV.

SDN and NFV both deliver additional ways to design and deliver networking to support cloud deployments. SDN separates the network control plane from the hardware allowing virtualization and scalability of network services. NFV decouples key networking functions like network address translation(NAT) and domain name services (DNS) from proprietary hardware. Both complementary technologies enable networks services to be deployed in the same rapid fashion as compute resources.

WHICH CLOUD SERVICE IS RIGHT FOR YOU?

Now it's time to choose a cloud provider and you ask yourself, how do I choose the best provider out of a market of thousands of providers? Now is not the time to abandon enterprise procurement skills and strategy, but to narrow your focus on a few key areas that will ensure a smooth cloud deployment:

- **Choose the best platform for your workloads**

Nearly all businesses who have a need for cloud infrastructure services will have different buying criteria and pain points- some will have more acute compliance and privacy requirements; some will require the ability to massively scale compute while

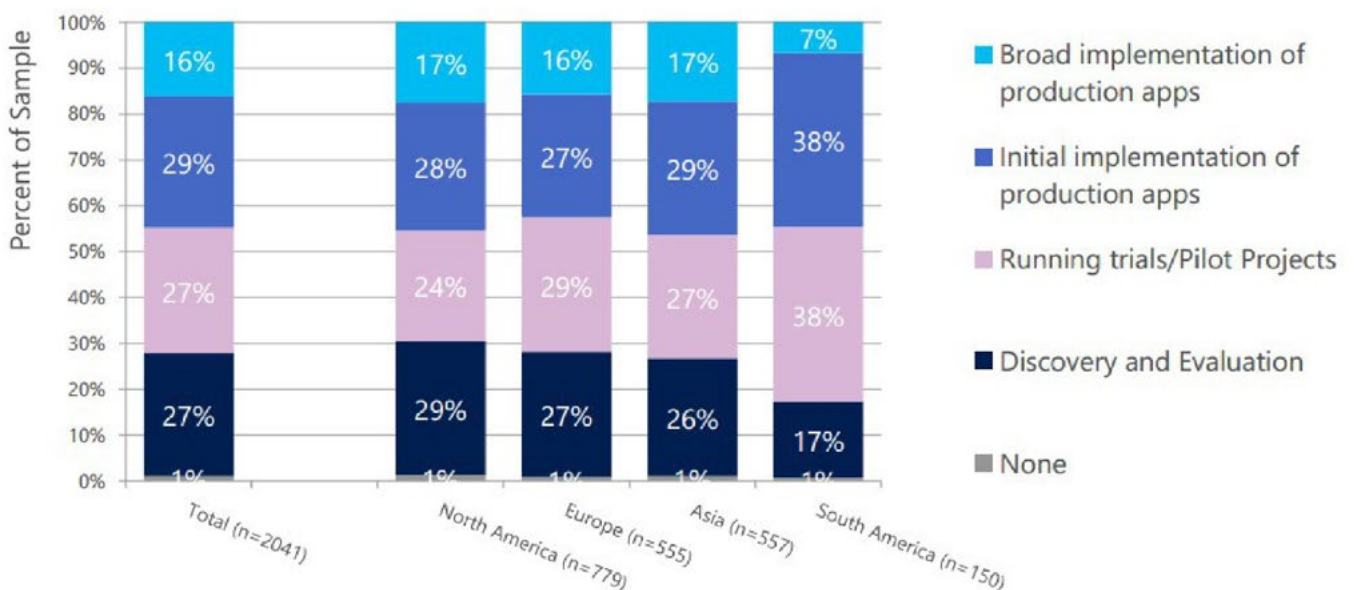
some require only static capacity. Expecting a single cloud provider to meet all those needs is foolish. Choose a provider who specializes in the workloads that you will be moving to cloud most frequently. templates useful to your enterprise.

- **Buy-in from all Parties**

Often overlooked and undervalued, most cloud projects are driven by a business unit or techie who doesn't understand how a cloud project fits in the larger enterprise strategy. For nearly all enterprises, using a cloud or hosting provider is truly a new venture, one that requires extensive internal buy in. Each provider engages and on-

CLOUD COMPUTING ADOPTION by Region

Which of the following best describes your organizations adoption of cloud computing models?



451 | Research | UptimeInstitute | yankeegroup | the 451 group

Source: <http://getsecure.space/wp-content/uploads/2015/12/cloud-computing-adoption-by-region.jpg>

boards clients differently. Some will provide a team that leverages their operational and business acumen to design the best customer solution. Some providers will provide wikis and help desk forums to enable users to self-provision. The goal is to choose a provider whose process best matches your enterprise's operational expertise.

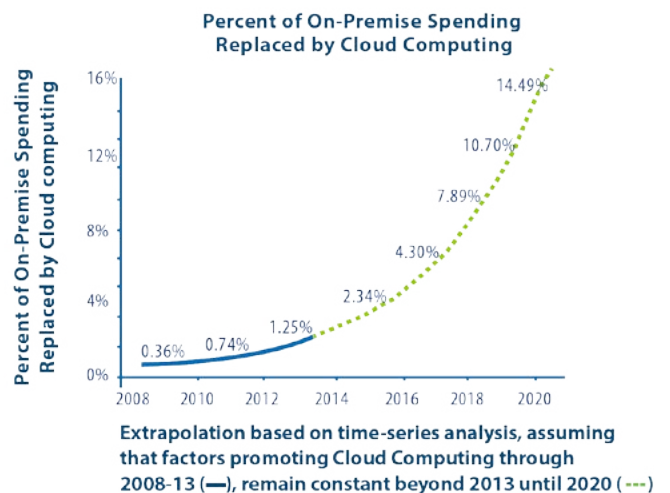
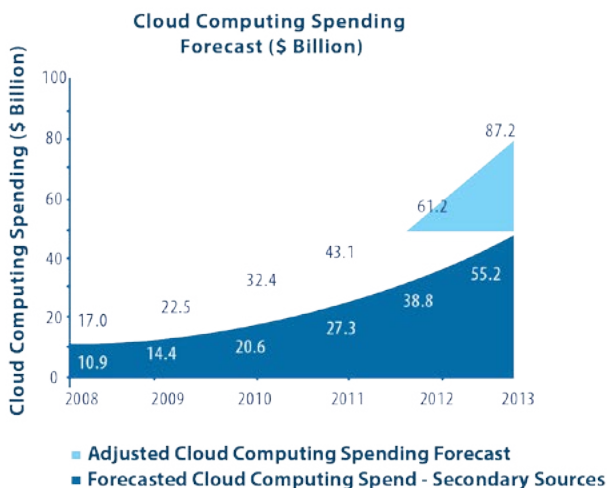
• **SLAs and contractual terms**

It's easy to be consumed with technology decisions, but cloud services are just that; services. Enterprises are giving up a degree of control and choice in exchange for a highly available service. Areas that require scrutiny:

- **Performance** - Availability of all elements of the service, with a focus on service uptime, latency and packet loss.
- **Data Ownership** - Explicit language that affirms your ownership of data hosted on cloud platform as well as the ability to get the data out of the cloud when needed.
- **Security** - Ensuring that all virtual machines are patched and protected, security standards and audits are followed and data at rest is encrypted.
- **Customer Support** - Providers must commit to aggressive mean time to repair and restore time frames based on severity of outages. Extended outages should qualify enterprises to receive credits for services.

IMPACT CLOUD COMPUTING ON ENTERPRISE IT SPENDING

Enterprise spending for on-premise solutions will fall, as cloud computing reduces the need for licenses, hardware or software.



The cloud computing market is forecast to grow at a rate of 36.6 percent during 2008-13 to \$55.2 billion in 2013. It will probably reduce overall technology spending by \$30.0 - \$39.4 billion in 2013, replacing 14.5 percent of global on-premise spending in 2020.

Source: Research and Innovation Estimates

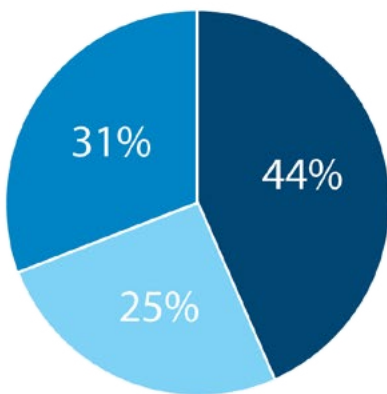
<https://softwarestrategiesblog.com/2012/01/17/roundup-of-cloud-computing-forecasts-and-market-estimates-2012/>

FUTURE CLOUD MODELS AND PLATFORMS

One thing that is certain about cloud services is that innovation will continue to change the composition of the cloud services market. Areas that are the ripest for change are:

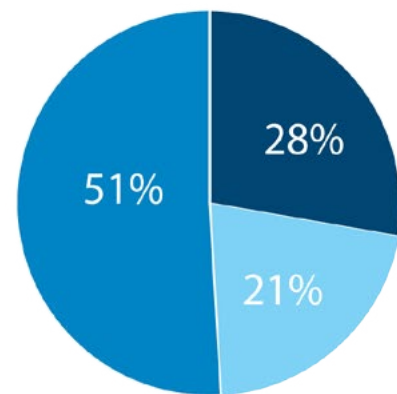
- **Service offerings** - Increased focus on database functionality, "server-less architecture", containers and other features that encourage application development and portability between clouds.
- **Pricing** - Explicit language that affirms your ownership of data hosted on cloud platform as well as the ability to get the data out of the cloud when needed.
- **Technology improvements** - The cycle of service enhancement will benefit greatly from newer technologies. Deployment times will be reduced, virtual machines will become lighter weight and more agile; most importantly tools used to migrate cloud workloads and manage cloud environments will become more user friendly.

Private Cloud Adoption



- Currently Deploying
- Planning On Deploying
- No Plans To Deploy

Public Cloud Adoption



Source: Uptime Institute 2013 Data Center Industry Survey (August 2013)

<http://www.zdnet.com/article/moving-to-iaas-an-overview/>

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