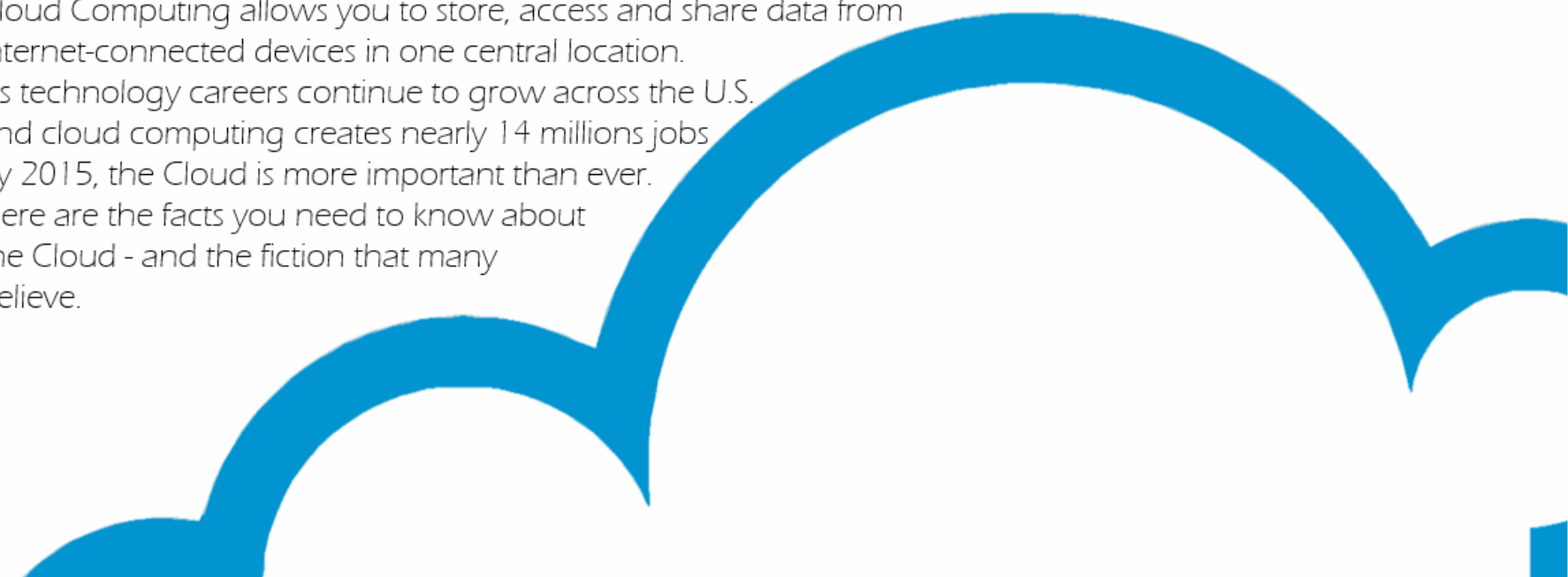


CLOUD COMPUTING: FACT OR FICTION ?

Stefano Portelli
Project Manager
EMC Professional Services

Cloud Computing allows you to store, access and share data from internet-connected devices in one central location. As technology careers continue to grow across the U.S. and cloud computing creates nearly 14 millions jobs by 2015, the Cloud is more important than ever. Here are the facts you need to know about the Cloud - and the fiction that many believe.

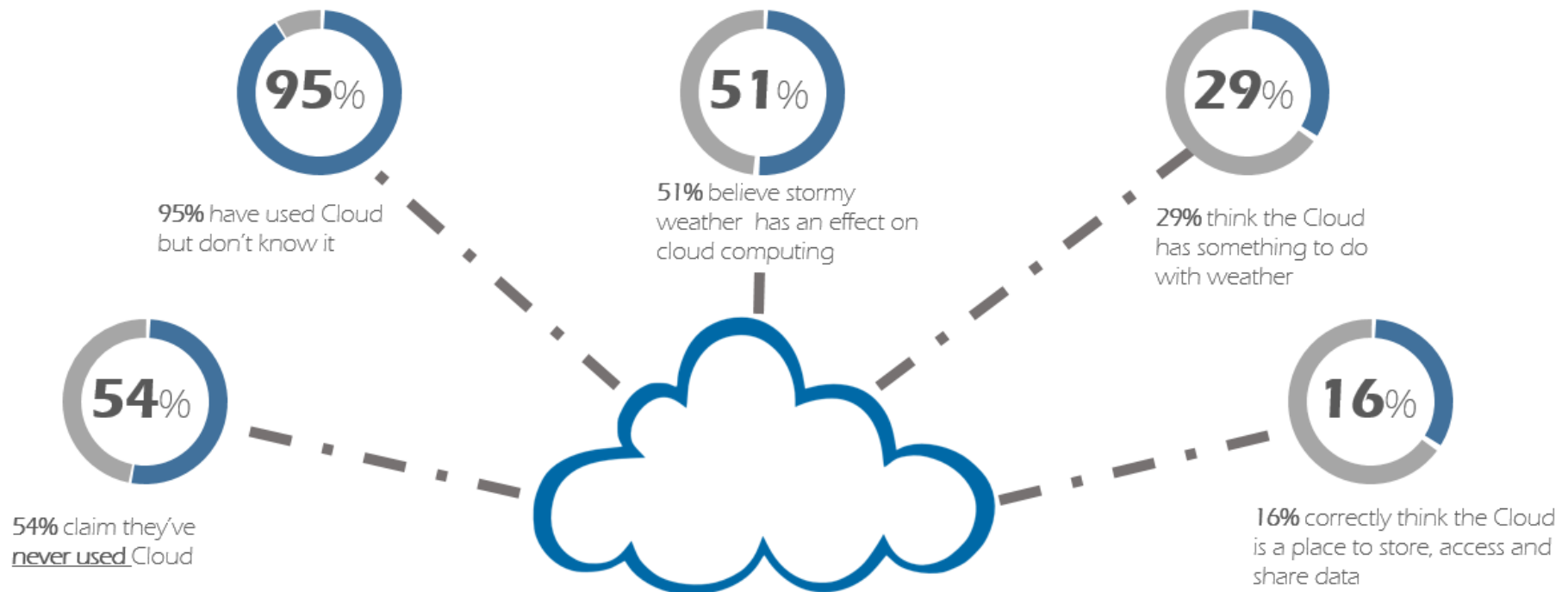


THE PERCEPTION OF THE CLOUD

What people believe when it comes to cloud computing.

While “the cloud” may be the tech buzzword of the year, many Americans remain foggy about what the cloud really is and how it works.

A national survey by Wakefield Research, commissioned by Citrix, showed that:



There are some misconceptions...

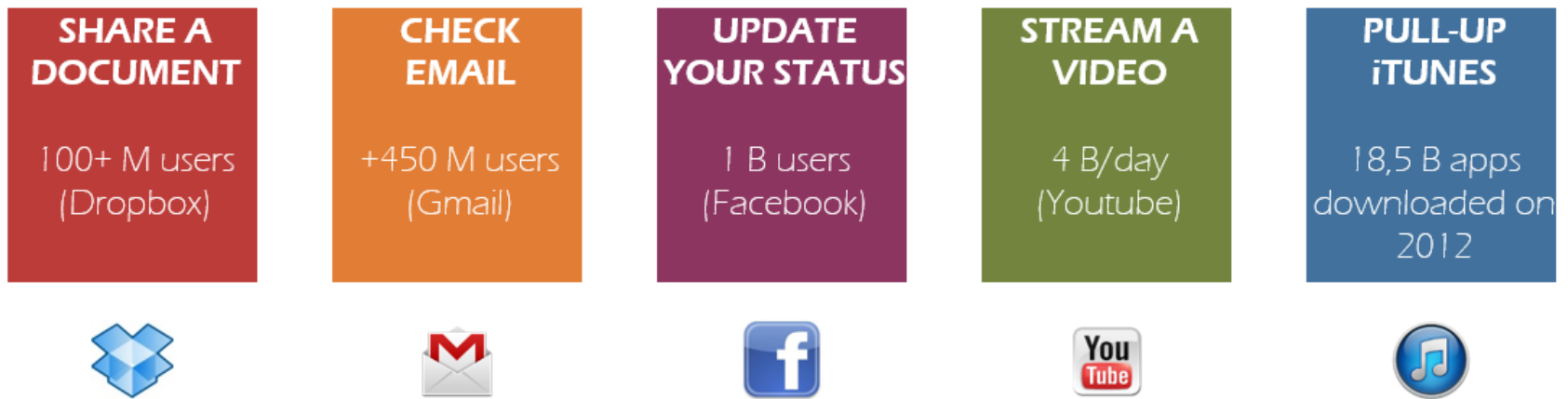
1

THE CLOUD IS A PLACE.

FACT
 FICTION

Cloud computing is a model for enabling ubiquitous [...] network access to a shared pool of configurable computing resources*. The Cloud is nowhere, but everywhere.

You're probably already using it when you:



* NIST (National Institute of Standard and Technology) definition of Cloud Computing

2 THE CLOUD IS GROWING.

FACT
 FICTION

By 2016, 340 million more people will be moved to the cloud. Impressed? Take a look at how we used Cloud in 2012:



Bank online



Game online



Shop online



Store photo online



Social Network



Online file-sharing

3 CLOUD IS A «NEW» THING

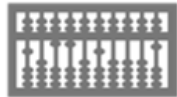
FACT
 FICTION

The history of Cloud Computing starts a long time ago... (in a galaxy far, far away).

2000BC



Sumerians devise the abacus



1971

IBM introduces **Time Sharing**, an optional feature allowing multiple users to share use of a computer simultaneously



1973s

Xerox invents 'Xerox Alto' the first personal PC that had a **graphical operating system (GUI)** that later served as inspiration for Apple Computer's Macintosh, and Microsoft's Windows operating system



1960s



Ideas about computation as a public utility emerged in public discourse and literature. **Herb Grosh**, theorized that the entire world would someday "operate on dumb terminal powered by just 15 large data centers"



Ian Foster and Carl Kesselman came up with the concept of "The Grid". The analogy used was of the electricity grid where users could plug into the grid and use a metered utility service. Plug into a grid of computers and pay for what you use.

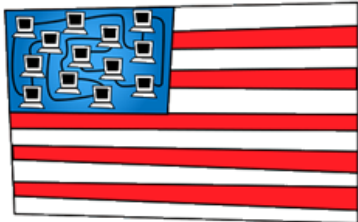


1990s

The term "cloud computing" was first used by Information System Professor, Ramnath Chellappa.



1997

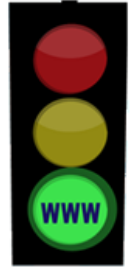


1998

Diane Greene, Mendel Rosenblum, Scott Devine, Edward Wang and Edouard Bugnion found VMware.



Terremark complete construction of one of the largest datacenter in the world. The building is a **70.000 square meter**, designed to withstand a Category 5 hurricane with approximately 8.600 tons of concrete roof ballast. That DC carries 95% of the data traffic between North and South America.



2001

2002

Amazon offered "Amazon Web Service" cloud computing to customers.

Salesforce.com introduced the concept of **delivering enterprise applications via a simple website**

1999

2003



EC2 (Elastic Compute Cloud) development begins as Amazon engineer **Chris Pinkham** starts building an "infrastructure service for the world"



2006

Introduction of **Amazon's Elastic Compute Cloud (EC2)** as a commercial web service that allowed small companies and individuals to rent computers on which to run their own computer applications.

2008

EUCALYPTUS

Open source AWS API-compatible platform called **Eucalyptus** offered **private clouds**. Packaging of computing resources became a **metered service** called Utility Computing.



Gartner saw an opportunity for cloud computing "to **shape the relationship among consumers of IT services, those who use IT services and those who sell them**"



The Fortune Magazine's "Top 100 Best Companies to Work For 2008" placed **Rackspace** as #32 the first year that Rackspace applied for consideration.

Microsoft launch his Cloud Computing Platform: **Azure**



2009

GoGrid positioned in the Visionaries Quadrant in Gartner's "Cloud Infrastructure as a Service and Web Hosting Magic and named one of the **Top 10 Best Cloud Services**



2010

Apple launched **iCloud**, a cloud-based storage service for Apple product owners.



iCloud

2011

Google Launched **Google Drive**, which supplants Google Docs



Google Drive

2012

1 Billion of people will own smart phones



2013

SaaS will Cannibalizing On-Premise Enterprise Applications (es. CRM)



2015



Microsoft released **SkyDrive** app for iOS/Windows Phone and desktop app for Windows Vista, Windows 7, Windows 8, and OS X user



Dropbox reached 100 million users and held **15% of the worldwide backup** client market, based on number of installations

The amount of information and content created and stored digitally will grow from 1.8 zettabytes in 2011 to over **7 zettabytes**

US **tablet sales will hit 44 million**, eclipsing laptop sales

Verizon on buy **Terremark** for \$19 a share, in a deal valued at \$1.4 billion.



1 Zettabyte = 10²¹ Byte = 1,000,000,000,000,000,000 bytes = 1,000,000,000 Terabyte

4

THE CLOUD IS 100% SAFE FROM CYBER ATTACKS.

FACT
 FICTION

With thousands of companies storing data on Cloud servers, the risk is escalated. Here are listed the common attackers:

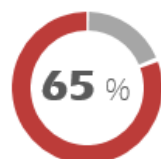
COMMON ATTACKER

(2012)



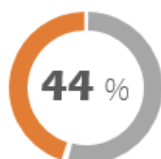
TOP INCIDENT CLASSES

(An incident is a validated threats, identified by correlating one or more events)



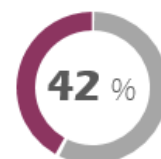
Web Application Attack

Attacks targeting the **presentation, logic or database layer** of web application (SQL injection)



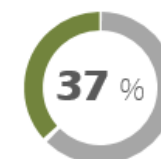
Brute Force

Exploit attempts **enumerating** a large number of combination, typically involving numerous credential failures (password cracking attempts)



Reconnaissance

Activity focused on **mapping** the network, application and/or services (port scan and fingerprinting)



Vulnerability Scan

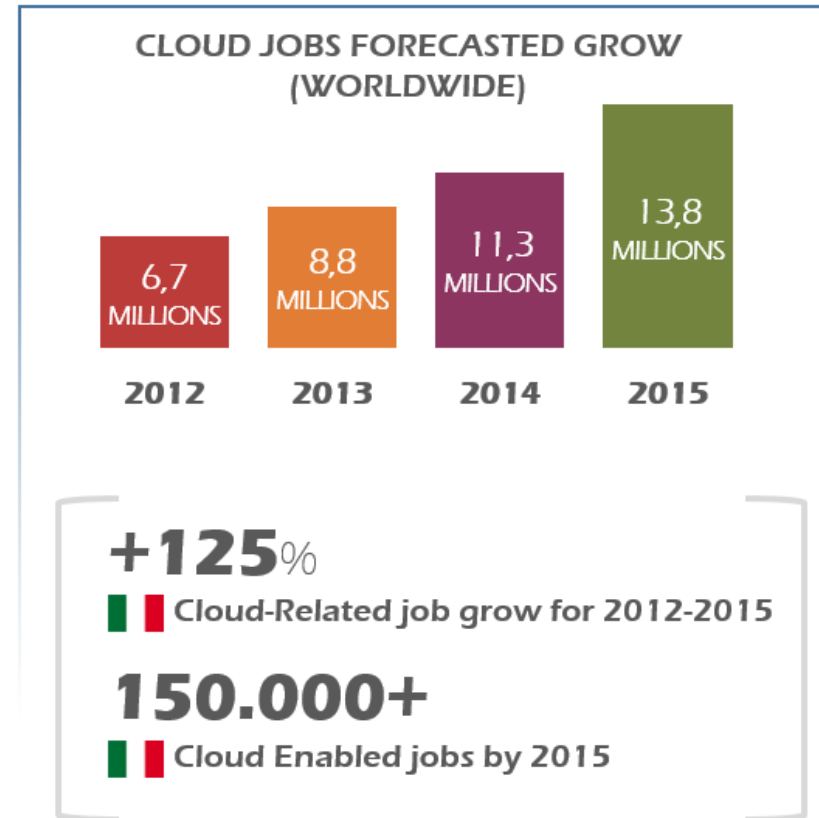
Automated **vulnerability discovery** in application, services or protocol implementation (unauthorized nessus scan)

5

THE CLOUD IS CREATING IT JOBS.

FACT
 FICTION

Companies like Amazon and Google have much higher need for IT admins that understand the specific concerns of the Cloud. Cloud Computing is a key component for these growing jobs:

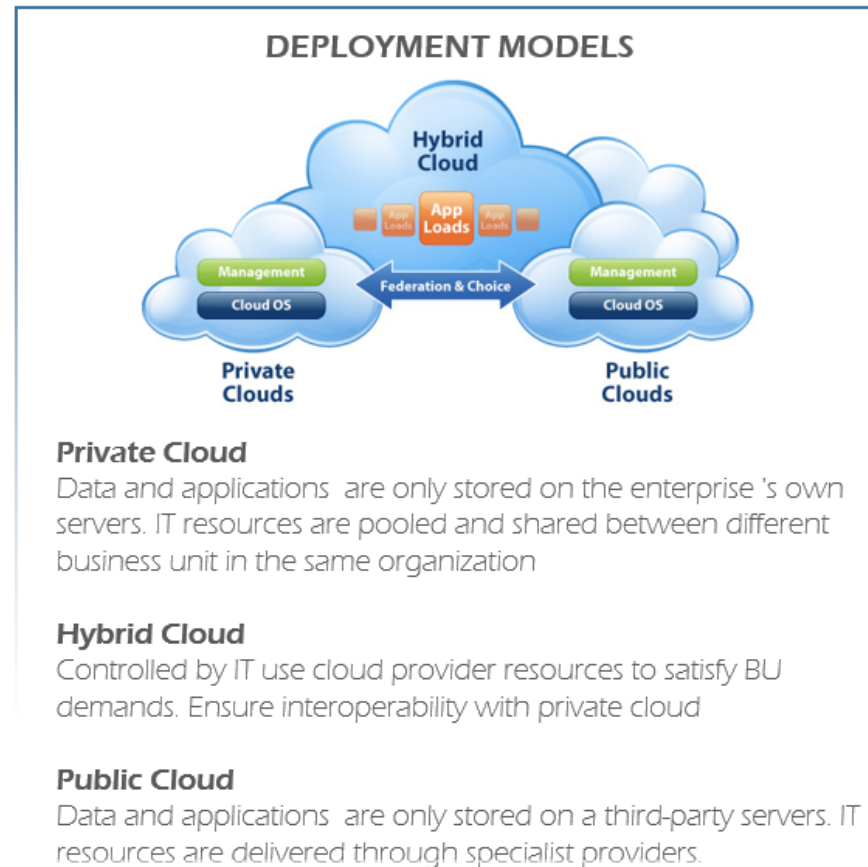
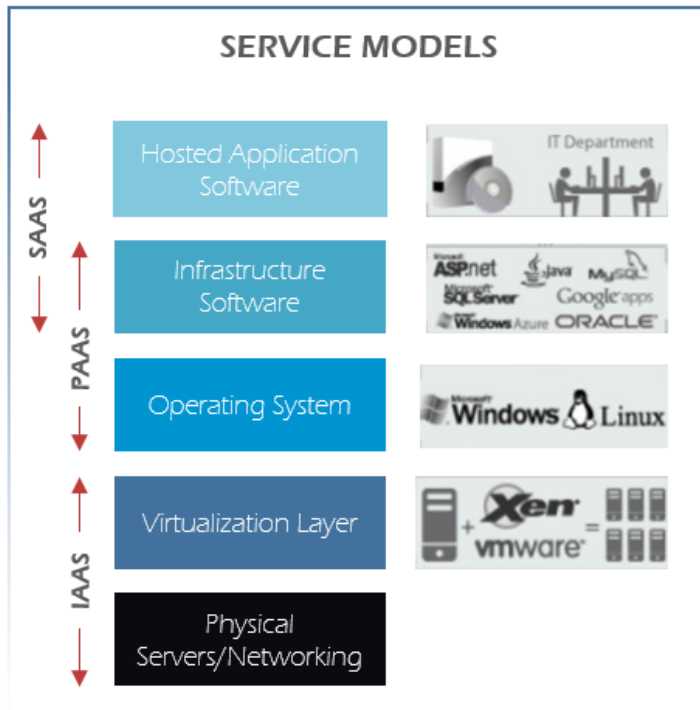


6

THERE IS ONLY ONE CLOUD IN THE UNIVERSE

FACT
 FICTION

The NIST definition of cloud computing is considered a gold standard, if we unpack it, we can see why. First, note that cloud computing is a usage model and not a technology. There are multiple different flavors of cloud computing, each with its own distinctive traits and advantages.

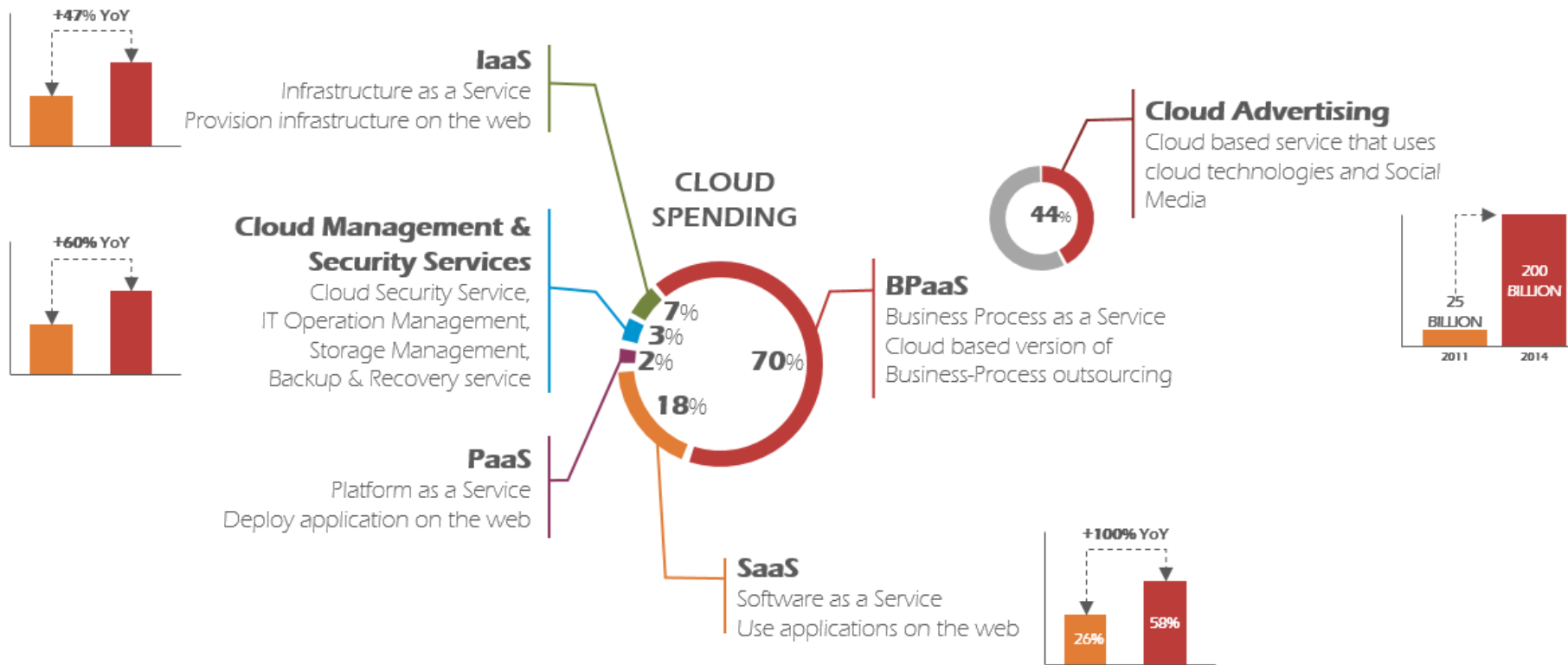


7

THE CLOUD IS A FAD

FACT
 FICTION

Cloud adoption is growing at a rate of five to eleven times faster than traditional software and a large portion of IT budgets are increasingly moving over to the cloud. This growth can be attributed to the lower barriers to entry and lower switching costs, which are sparking much more development and activity in the cloud.



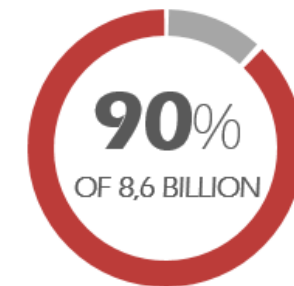
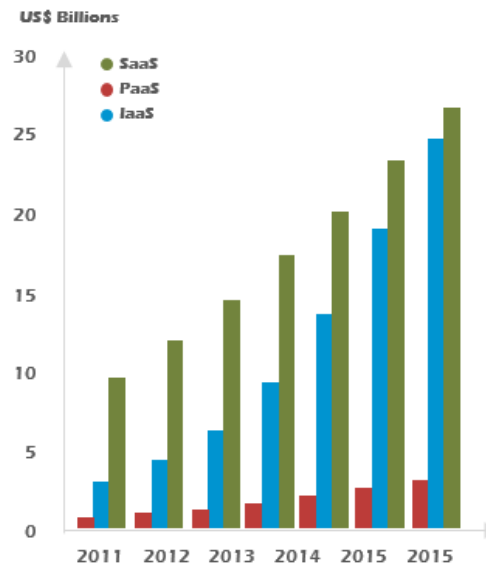
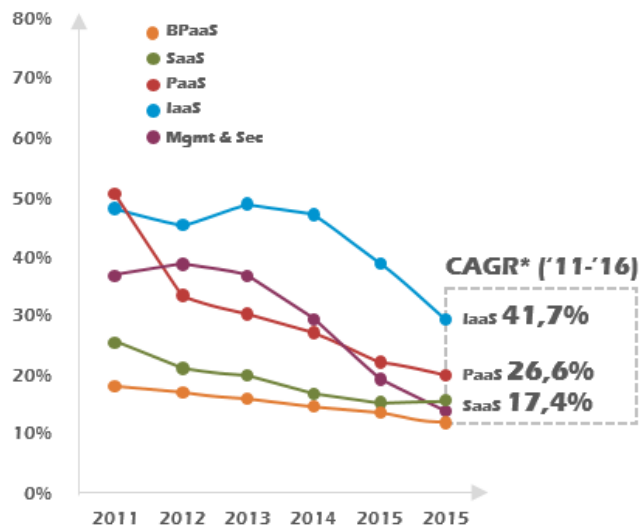
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High Growth Expected in Cloud Infrastructure Services



Microsoft - 90% of R&D budget (\$8.6 billion) is being used to improve cloud computing technology, including security measures and hosting services.

* CAGR: Compound Annual Growth Rate

8

CLOUD IS COSTLY AND TIME EXPENSIVE

FACT
 FICTION

You can have a complete set of infrastructure and application services that enable to run virtually everything in the cloud: from websites and mobile apps, to big data projects and enterprise applications. Today, hundreds of thousands of customers take advantage of these services in nearly every industry. On an on-demand, scalable, and easy-to-use web services.

1. Trade Capital Expenses (CAPEX) for Variable Expenses (OPEX)

Building on-premises infrastructure can be slow and expensive. There is expensive hardware that needs to be ordered, paid for, installed and configured. With Cloud Computing you just pay for the resources you consume on a variable basis.

0\$ to get started.

Pay as you go



Global Blue

“We avoided significant costs including \$800,000 in CapEx costs and \$5,000 - \$8,000 per month in OpEx costs.”

- Waleed Hanafi
SVP - CTO for Global Blue

[Read the Case Study](#)

Products Used: Amazon EC2, Amazon S3

8

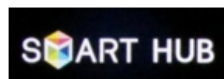
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2. Lower Variable Expenses Than Companies Can Do Themselves

Cloud Computing helps you reduce overall IT costs in multiple ways. A massive economies of scale and efficiency improvements allows to lower prices, and multiple pricing models allows to optimize costs for both variable and stable workloads. Additionally, Cloud Computing drives down up-front and on-going IT labor costs and gives you access to a highly distributed, full-featured platform at a fraction of the cost of traditional infrastructure.



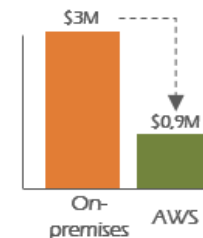
Samsung **saved \$34M** on SmartHub app



More than \$10M saved with first 12 apps migrated to AWS



50% reduction in analytics costs



70% lower 5 year TCO per app

8

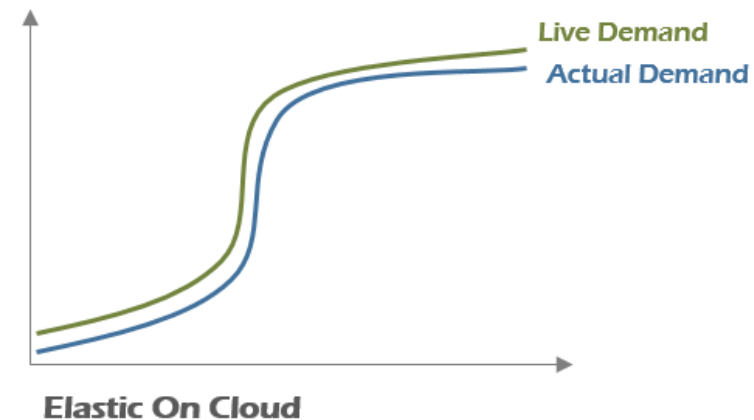
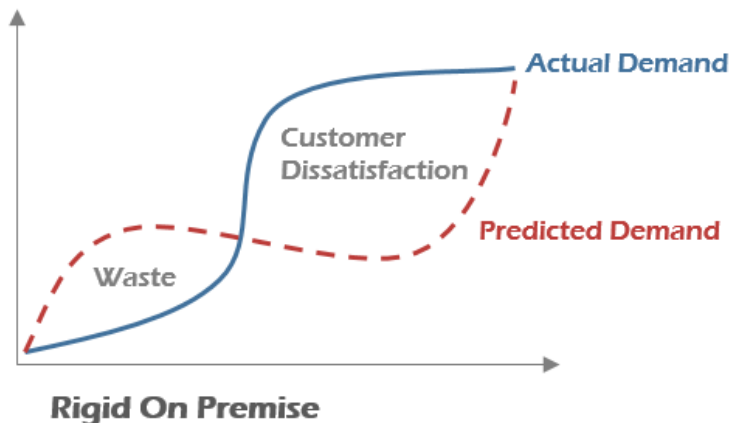
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3. You Don't Need to Guess Capacity

Predicting how customers are going to adopt your new application is difficult, and it's hard to get right. With Cloud Computing, these problems go away. You provision the amount of resources you need. If you need more, you can easily scale up. If you don't need them, just turn them off and stop paying.



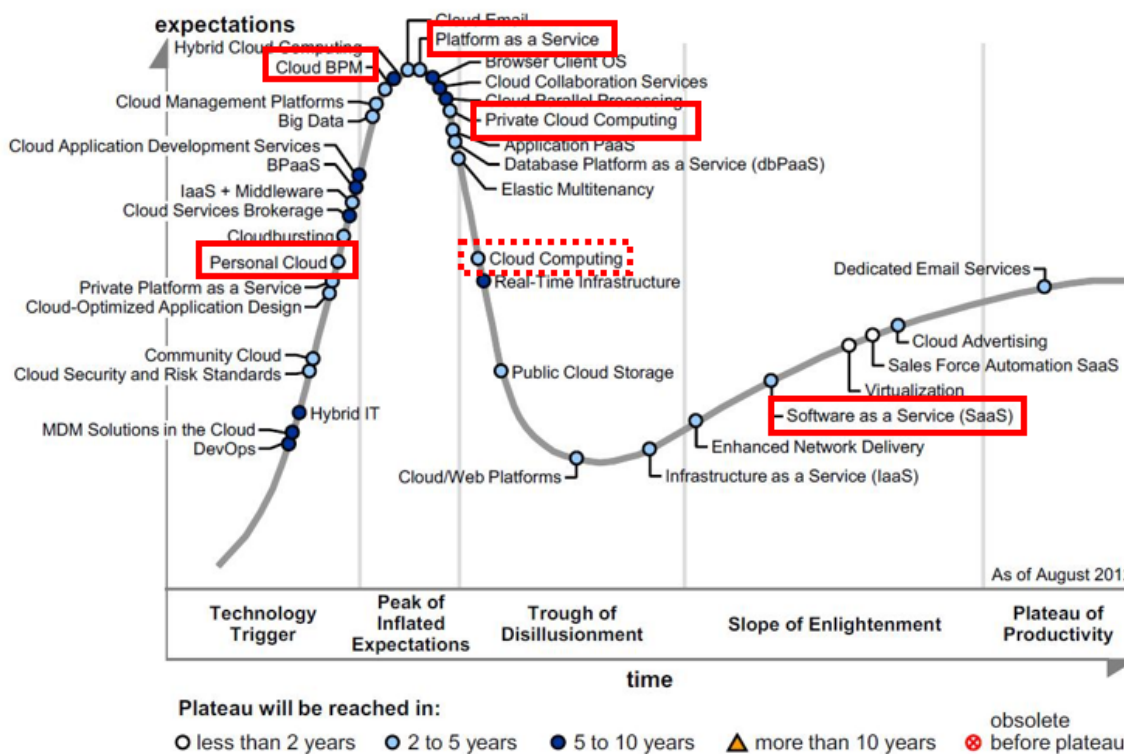
9

CLOUD IS NOT MATURE

FACT
 FICTION

Enterprises are beginning to change their buying behaviors based on the deployment speed, economics and customization that cloud-based technologies provide. Cloudwashing* continues to cause confusion and inflated expectations with enterprise buyers.

Figure 1. Hype Cycle for Cloud Computing, 2012



Source: Gartner (August 2012)

TAKE AWAYS

- The **Cloud BPM** (bpmPaaS) market is slated to grow 25% year over year, and 40% of companies doing BPM are already using BPM in the Cloud
- By 2014 the **Personal Cloud** will have replaced the personal computer as the center of user's digital lives.
- **Private Cloud Computing** is among the highest interest areas across all cloud computing
- **More than 50% of all virtualization workloads are based on the x86 architecture.** This is expected to increase to 75% by 2015

* Cloud washing (also spelled cloudwashing) is the purposeful and sometimes deceptive attempt by a vendor to rebrand an old product or service by associating the buzzword "cloud" with it.

10 MILLIONS OF PEOPLE ARE USING THE CLOUD.

FACT
 FICTION

Have an idea about how many folks have their heads in the Cloud already? Try to have a look to what happens during this presentation:



REFERENCES

<http://www.theverge.com/2012/6/28/3123643/gmail-425-million-total-users>
<http://www.businessinsider.com/heres-why-display-advertising-will-be-a-200-billion-business-2011-9>
<http://www.abavala.com/wp-content/uploads/Gartner-hype-cycle-2010.jpg>
<http://www.dataversity.net/wp-content/uploads/2012/08/gart.jpg>
<http://mashable.com/2012/11/13/dropbox-hits-100-million-users/>
<http://www.datacenterknowledge.com/archives/2011/08/01/report-google-uses-about-900000-servers/>
http://www.rackspace.com/knowledge_center/whitepaper/removing-the-cloud-of-insecurity
<http://www.intel.it/content/www/us/en/communications/internet-minute-infographic.html>
<http://www.statisticbrain.com/skype-statistics/>
<http://royal.pingdom.com/2012/04/04/tumblr-50-million-blogs-20-billion-posts/>
[http://www.microsoft.com/global/en-us/news/publishingimages/Cloud Computing s Role in Job Creation Web.jpg](http://www.microsoft.com/global/en-us/news/publishingimages/Cloud_Computing_s_Role_in_Job_Creation_Web.jpg)
<http://flexprocess.com/blog/2012/09/28/cloud-computing-technology-investment-strategy-ibm-microsoft-intel-oracle-amazon/>
<http://www.gartner.com/id=2102115>
<http://softwarestrategiesblog.com/category/2012-cloud-predictions/>
<http://aws.amazon.com/what-is-aws/>