

The Future Of Cloud Computing



::Setting Some Context

 Cloud Computing is a natural, disruptively innovative and timely opportunistic response to a converging set of socio-economic, political, cultural and technological stimuli*

*It's also a really good marketing job...



::Setting Some Context

 Cloud is an adaptive operational model, not a particular technology and there are lots of different types of Clouds.

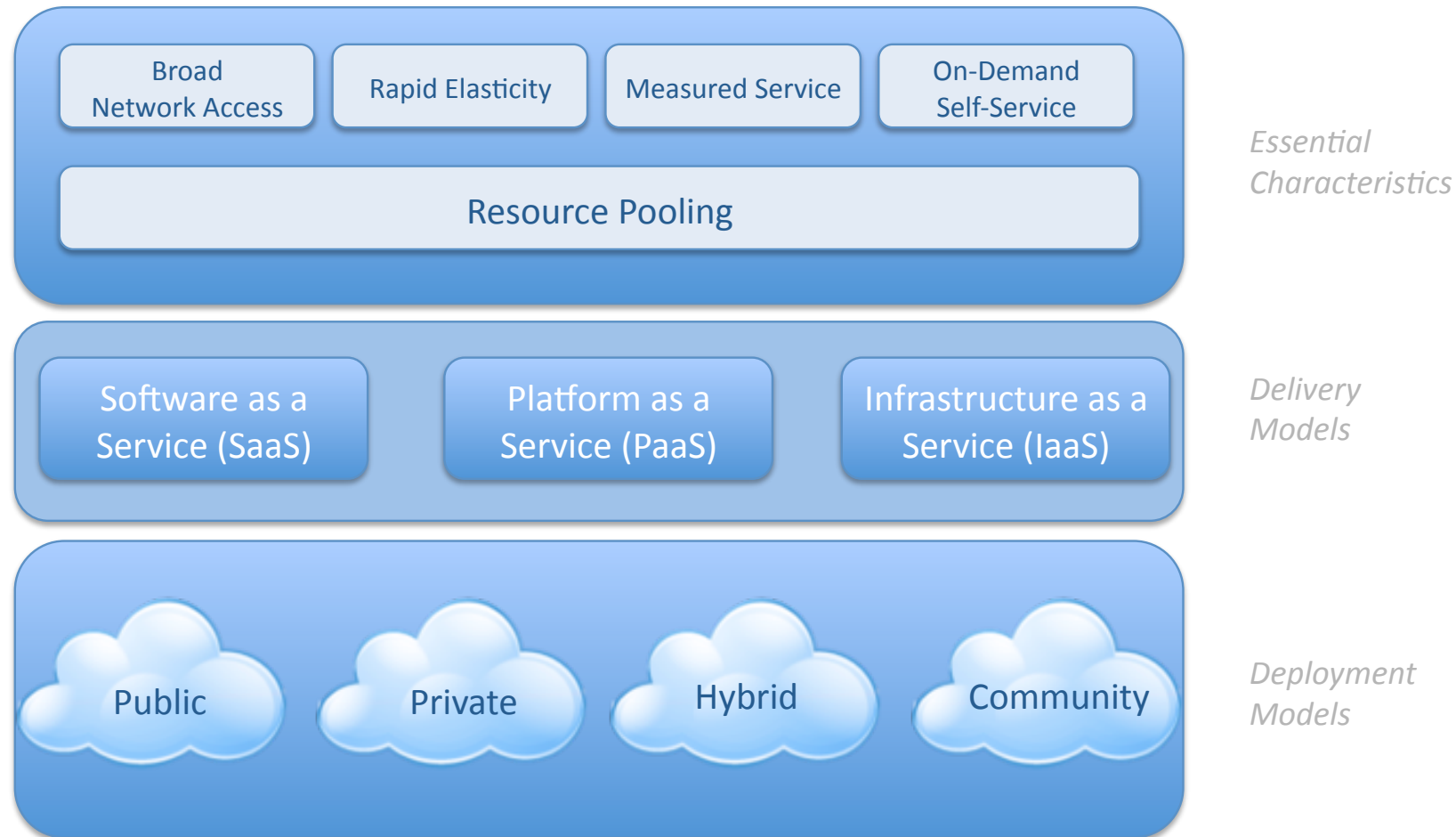




:::The Technician's Definition

Visual Model Of NIST Working Definition Of Cloud Computing

<http://www.csrc.nist.gov/groups/SNS/cloud-computing/index.html>





:: The Consumer's Definition



Everything Is Cloud...



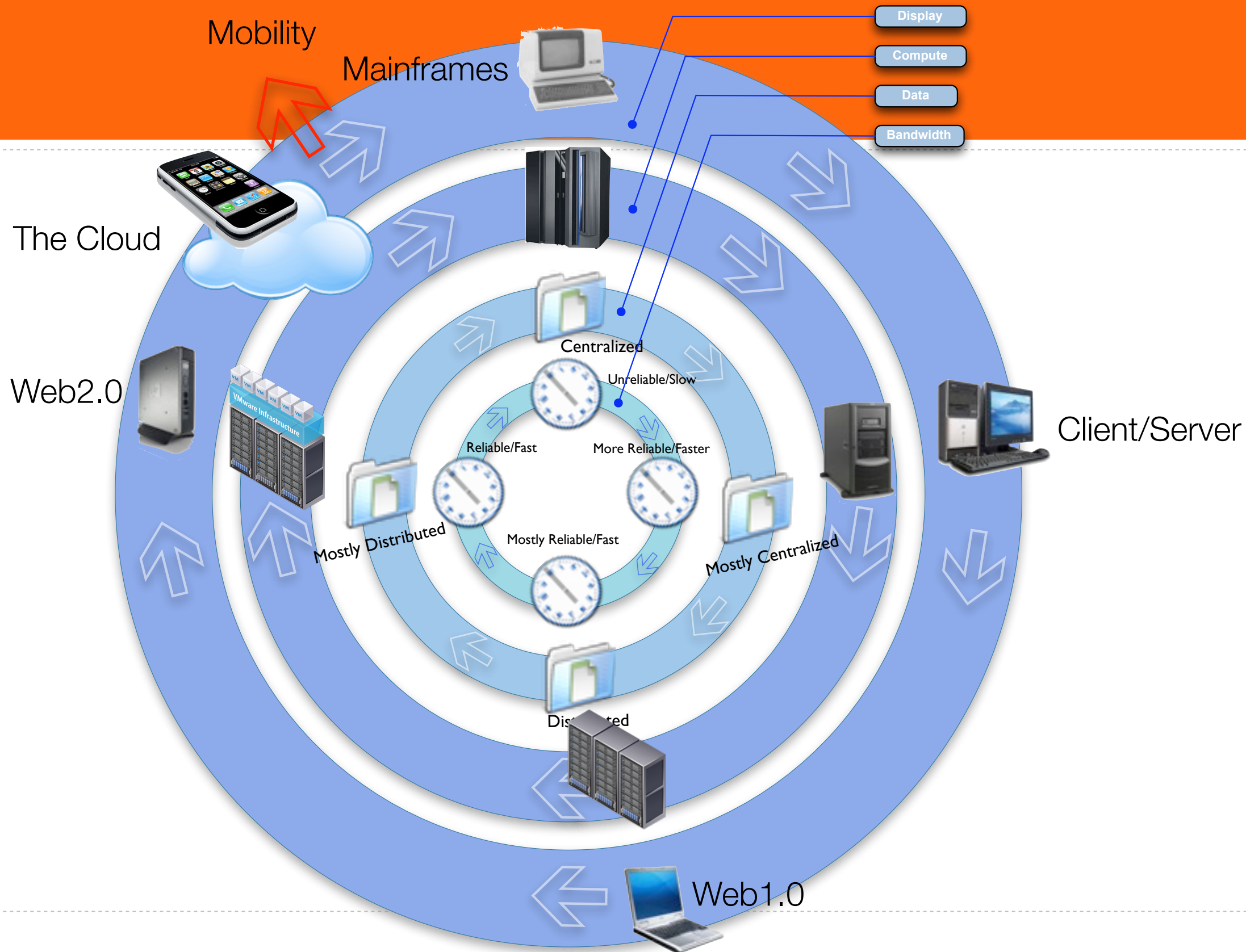
::Key Ingredients In Cloud

- ❖ **Abstraction of Infrastructure**
- ❖ **Resource Democratization**
- ❖ **Services Oriented**
- ❖ **Self-Service**
- ❖ **On-Demand Elasticity/Dynamism With a Utility Model Of Consumption & Allocation**





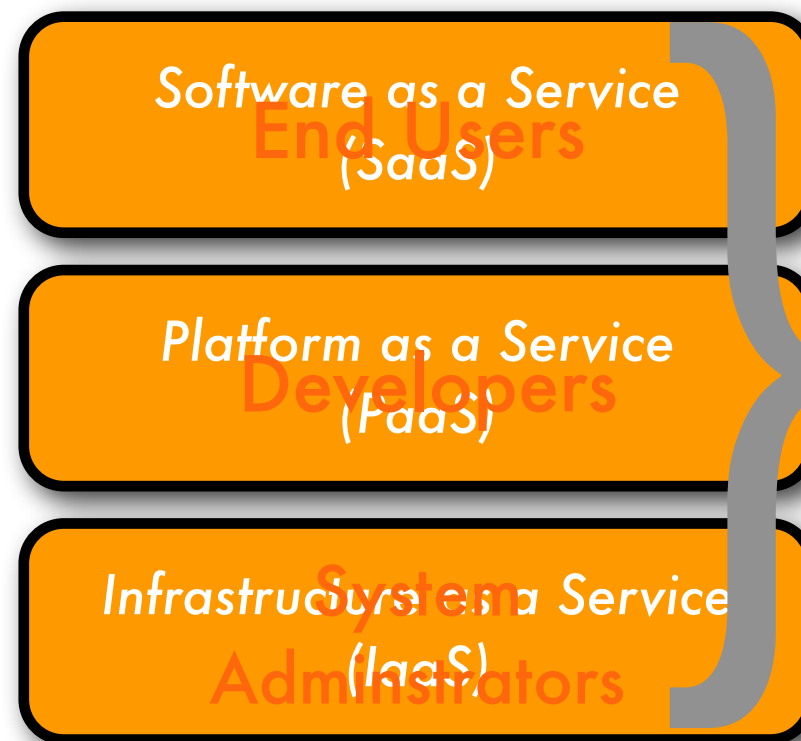
:: We've Been Here Before...





:: The “SPI” Model

Three delivery models that people talk about about when they say “Cloud”:

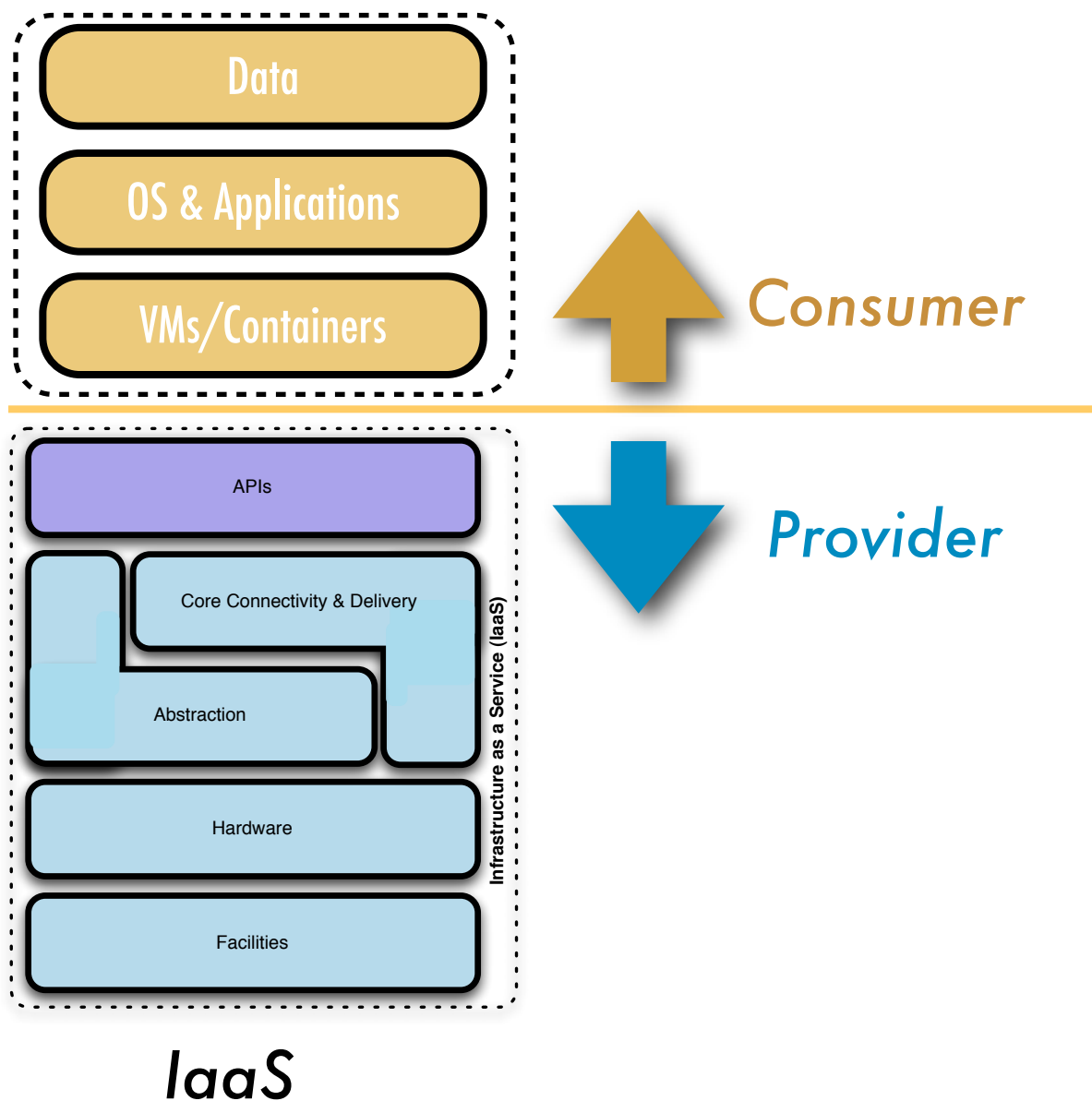


What Do These Look Like?





IaaS Security :: Guest/Host-Based



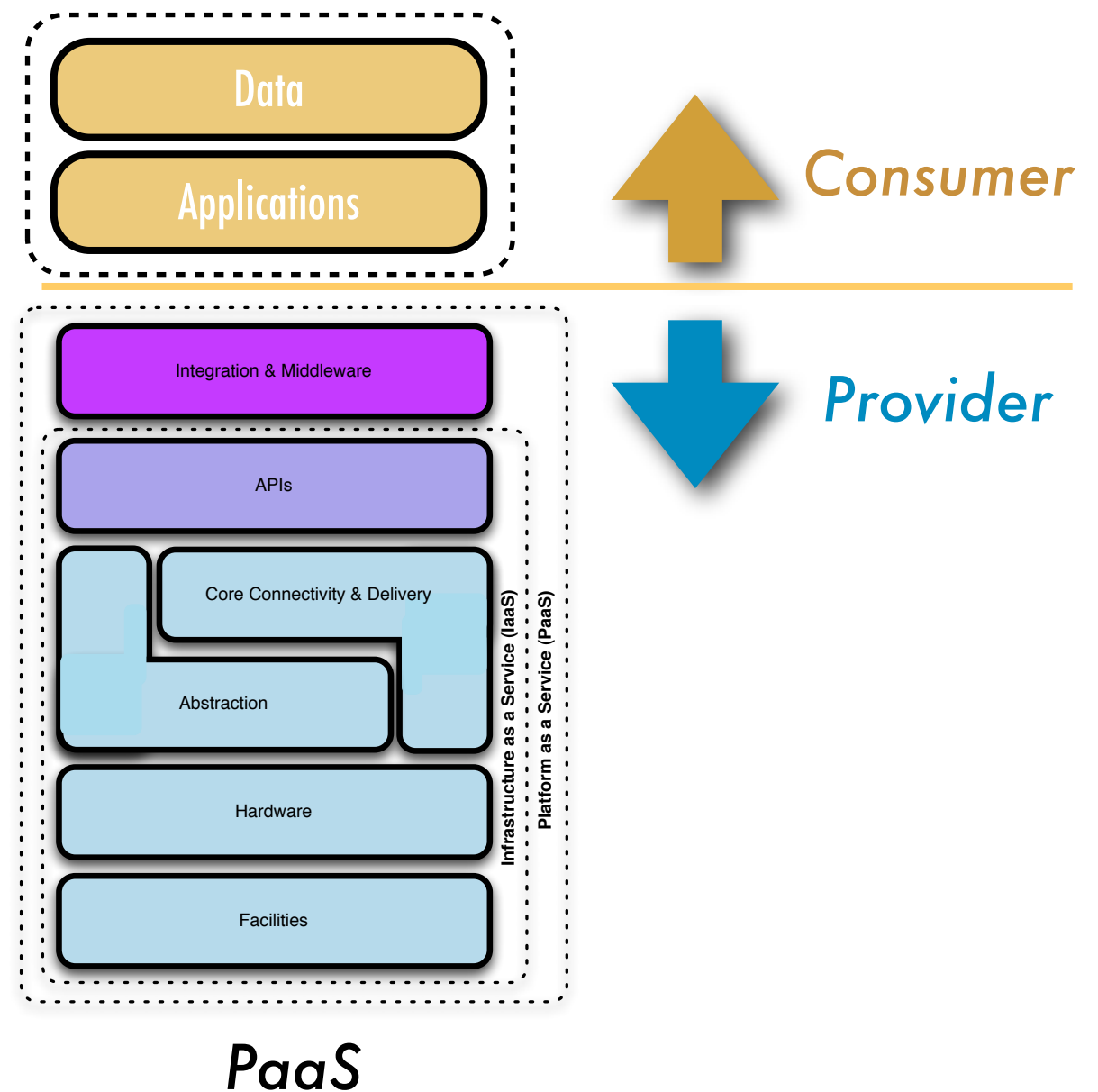
- ❏ Provider secures “their” infrastructure to maximize availability & multi-tenancy
- ❏ Remainder of the stack (and confidentiality, integrity) is your problem
- ❏ General focus is on VM’s & Guest-Based





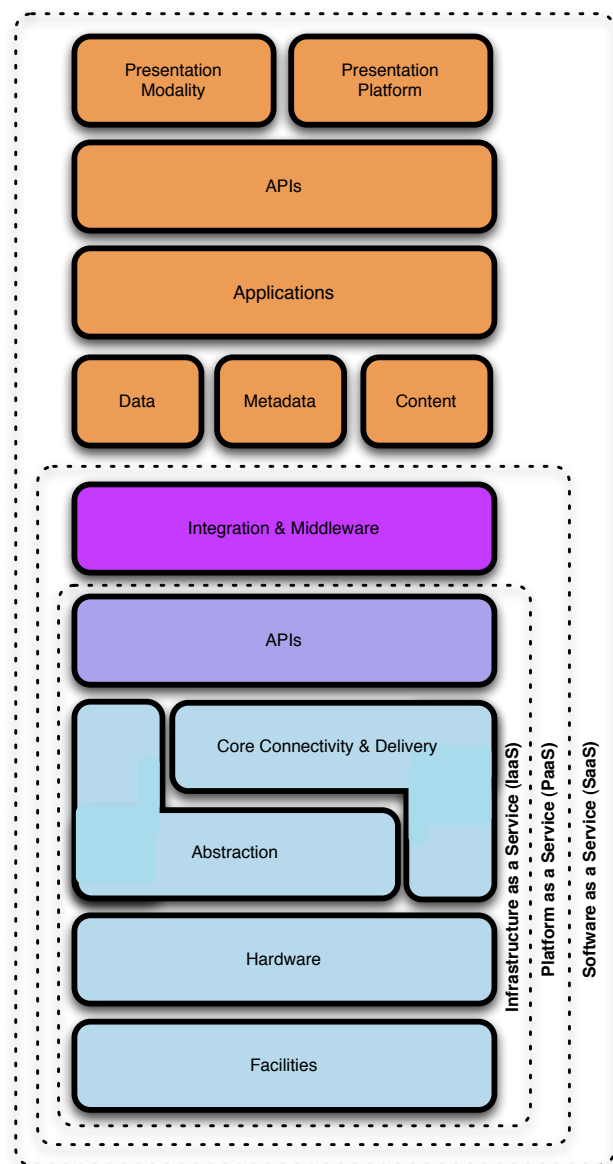
PaaS Security :: Programmatic

- Provider owns the compute, network, storage layers & programmatic interface security
- The consumer creates the applications based upon supported development environment
- Writing secure applications and ensuring your data is safe is your responsibility





SaaS Security :: All or Nothing



SaaS



Provider

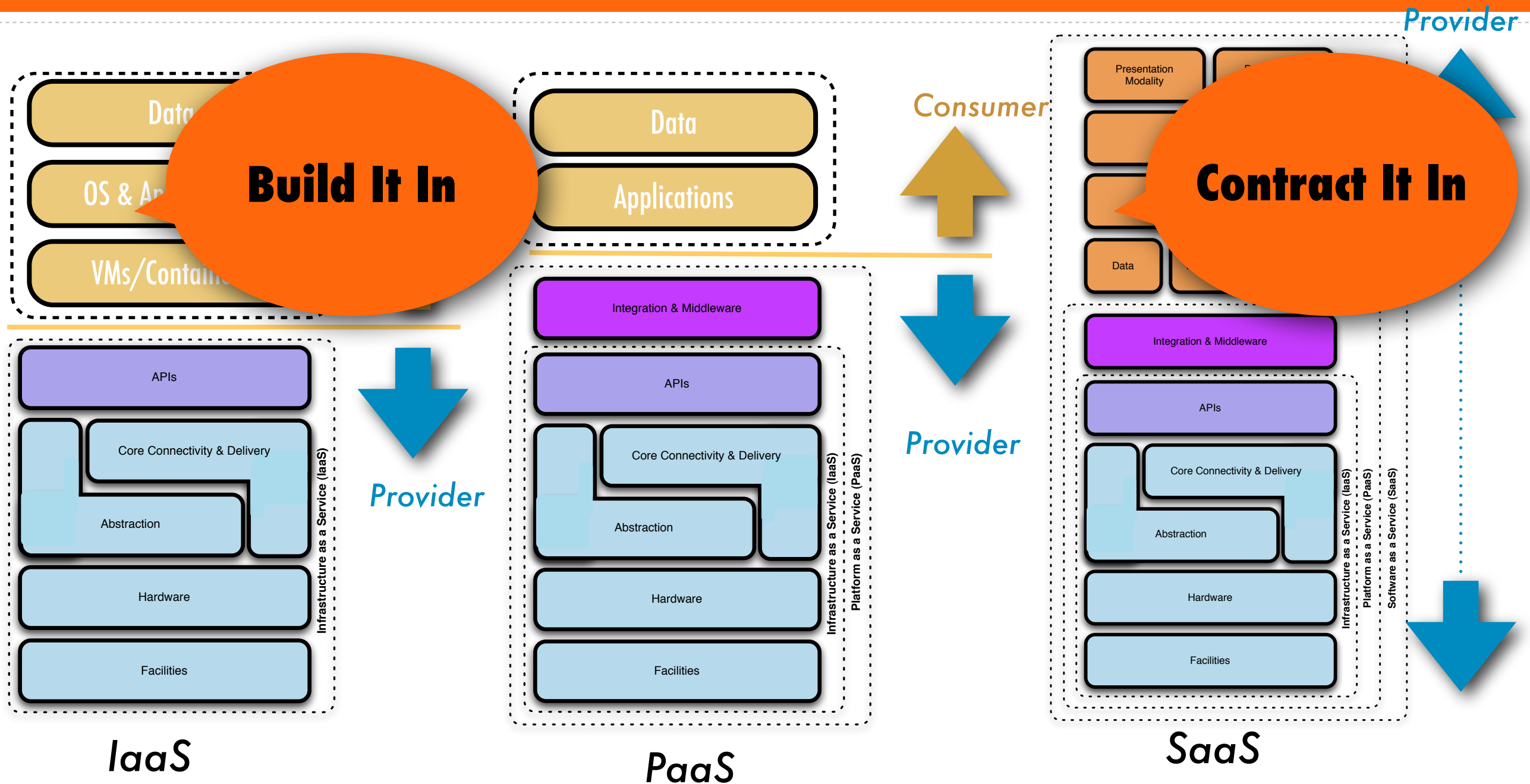


- ❏ The Provider Owns the Entire Stack
- ❏ Security (C, I and A) Become A Contract Negotiation
- ❏ Traditional Security & Compliance Functions Are More Administrative & Policy-Focused





:: What This Means To Security



:: The Punchline

- ❖ In The Simplest Of Terms, Using Cloud Means Imagining Applications & Information Across All Tiers Have The Potential To Be Connected Directly To The Internet...
- ❖ We Can't Trust The Provider, So We Must Engineer Security Into Design Patterns Across The Entire Stack
- ❖ Any "Dumb" Component In The Stack Compromises The Integrity Of the Entire Stack...
- ❖ APIs, Intelligence and Automation
EVERYWHERE





All About Gracefully Giving Up Direct Operational Control Over Infrastructure





It All Comes Down To **Trust**...



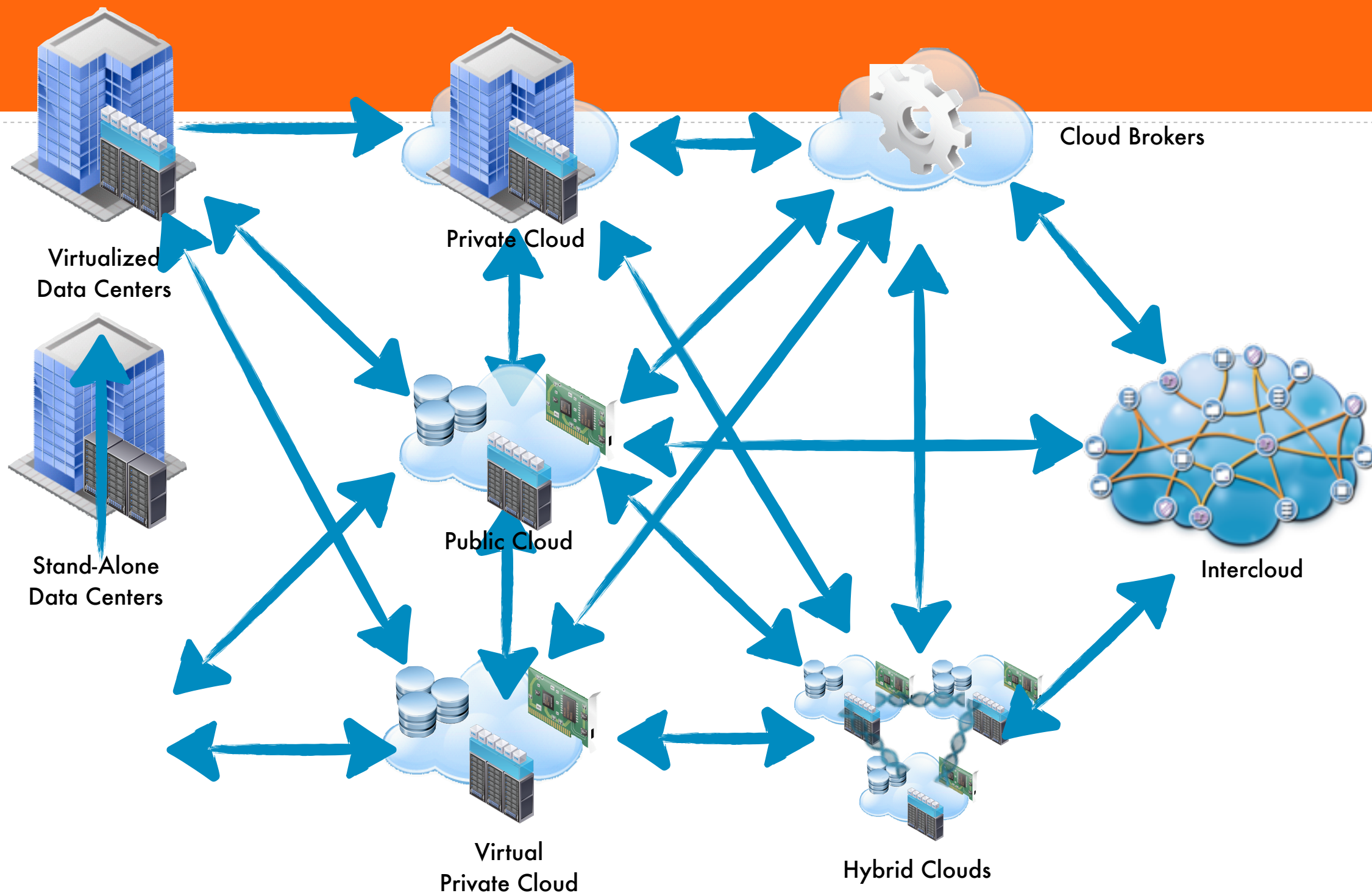


Toward A Secure Cloud Future...





Journey To the Cloud Made Simple



Federation / Workload Portability / Interoperability



Simple, Right?





Let's Ask The Magic Cloud 8-Ball





Is Cloud A Major Shift In IT?





Will Everything Move To The Cloud?





Is All We Know & Do
Today In Security
Worthless In Cloud?





Is The Cloud More Secure?





Without Context, Silly Question





More Secure Than What?



Can We Trust The Cloud?





So I Have Options Today?

YES
DEFINITELY





So, What's The Future Of Cloud?





So, What's The Future Of Cloud?





So, What's The Future Of Cloud?





So, What's The Future Of Cloud?





:::The Internet Of Things

Connected Devices



500 million
(1/10th of a connected device per person)



1 Trillion
(140 connected devices per person)

35 billion
(5 connected devices per person)

Source: Forrester Research, Cisco analysis—forecast of 2013 assuming consistent growth trends

Applications



3000 total mobile applications worldwide



265,000 total mobile applications worldwide

Source: Windows Mobile, Morgan Stanley, Cisco analysis—forecast of 2013 assuming consistent growth trends

1,500,000 total mobile applications worldwide

Security Threats



624,000 security threats



2,600,000 security threats

Source: Symantec, Cisco analysis—forecast of 2013 assuming consistent growth trends

5,700,000 security threats

2007

2010

2013

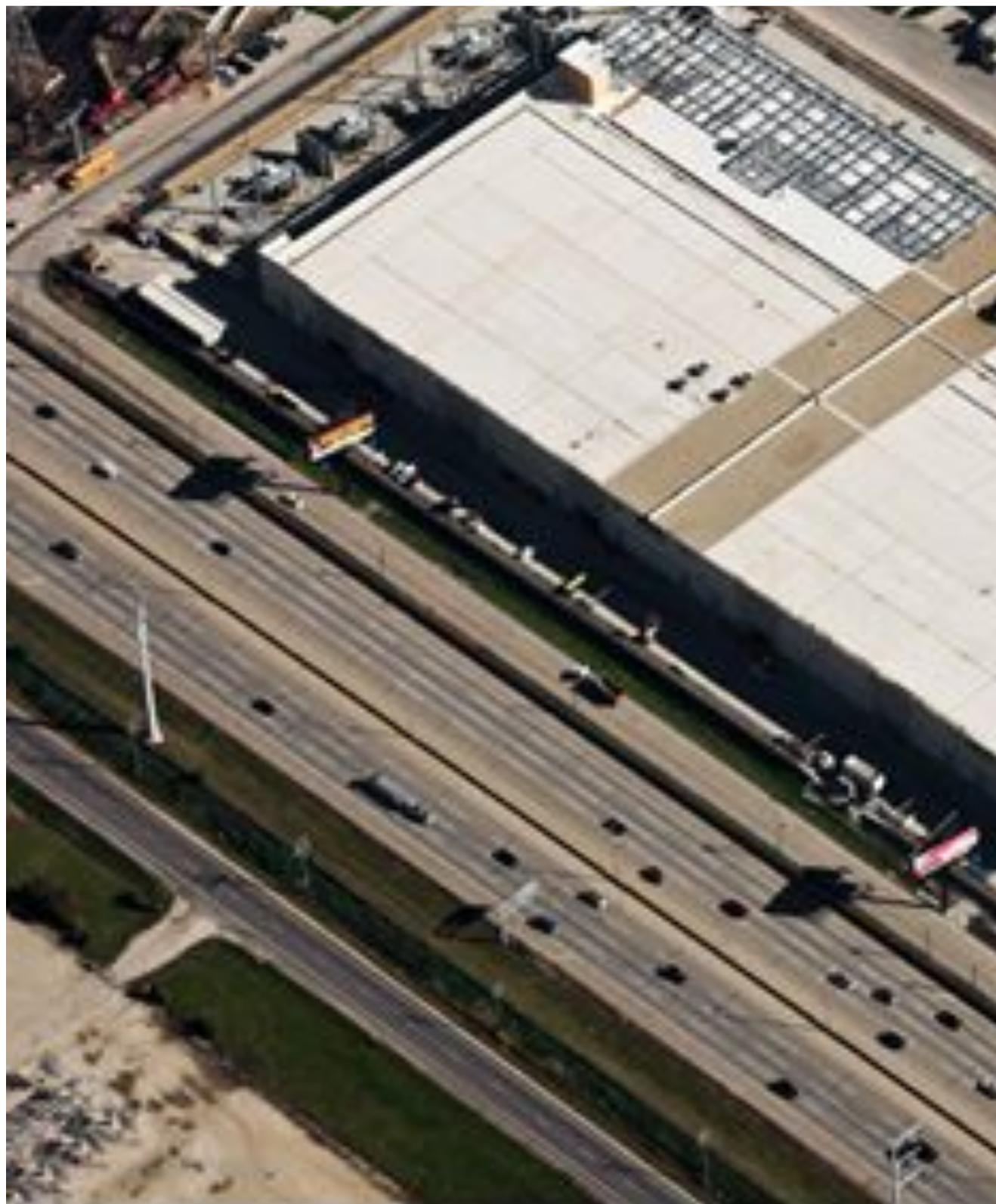


There Are ~4,100,000,000 Of
These....





...and 6,797,100,000 Of These



So While
Mega Data
Centers Re-
Centralize
Our Apps &
Data In Fewer
& Fewer
Locations
Thanks to
Cloud...

Microsoft's Chicago Data Center
October 2009
Photo By McShane-Fleming Studios

These Little devices --
Distributed Everywhere
-- Have Amazingly
Powerful Processors,
Lots Of Memory, Near-
Ubiquitous Connectivity
and Native Apps &
Data....





The Consumption Modality Will Ultimately Become More Important Than The Back-End Delivery Mechanism



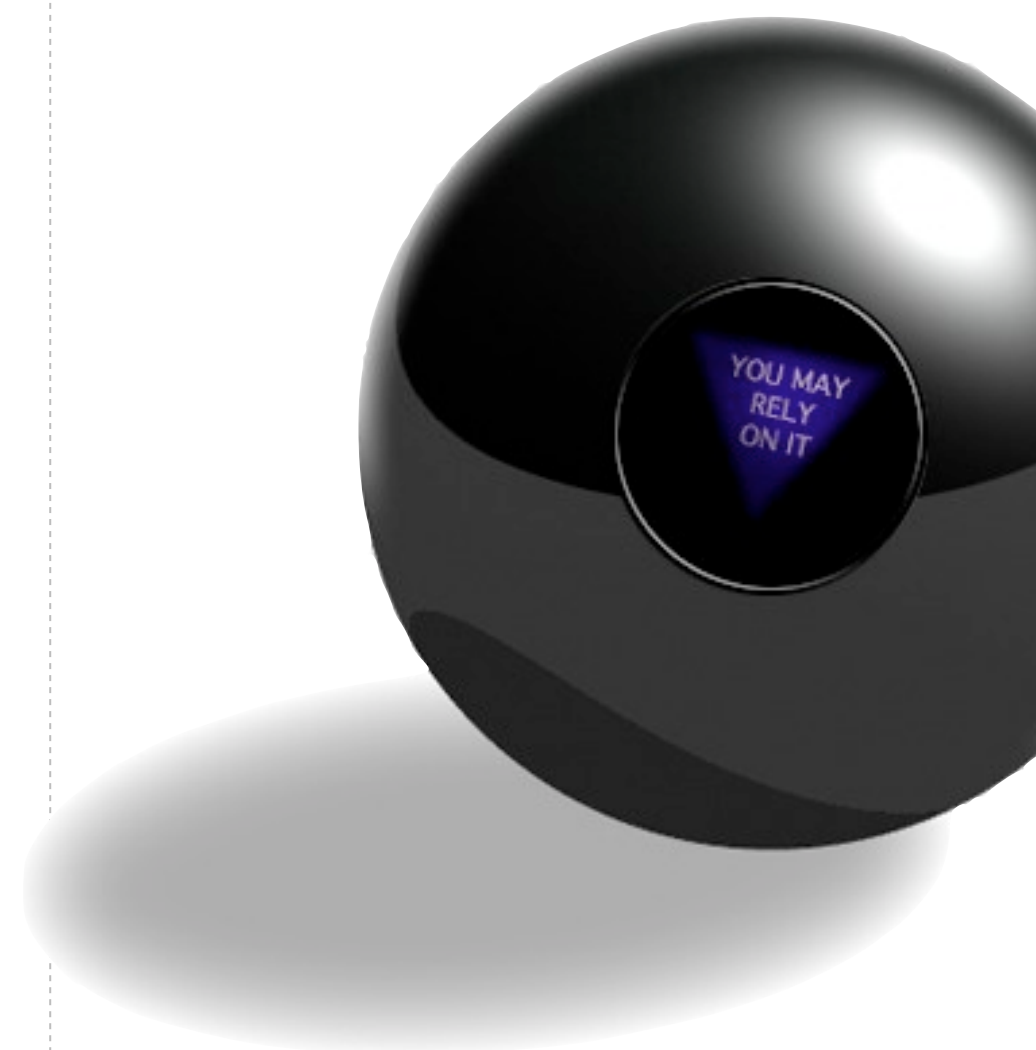


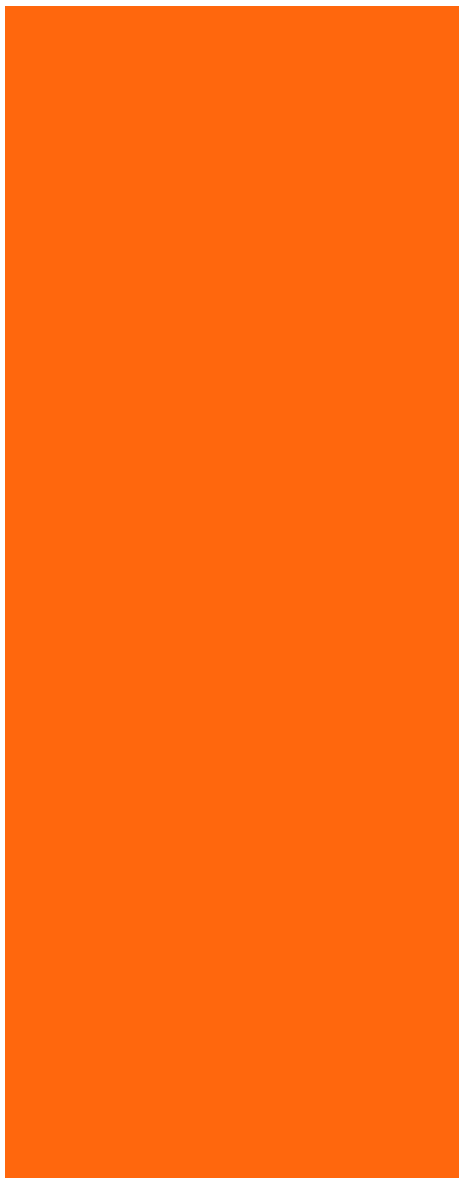
How Will You Choose What To Protect & Where Will You Choose To Invest To Protect It?



The Eight Things That Matter (Again)

- Open Standards & APIs
- Programmability & Automation
- Evolution of Name Spaces & Registries
- Transparency & Visibility
- {Id}Entity and Authentication
- Mobility
- Privacy & Law
- Information Centricity & System Survivability





What Does That Mean?



Abstraction As Distraction

- ☸ Cloud is a fantastic forcing function, let's embrace it!
- ☸ Stay grounded: think globally, act locally
- ☸ The Cloud is De-Perimeterization...amplified
- ☸ Plan for FAIL | Re-architecting Means: Information Centricity & Survivability
- ☸ Public, Private, Hybrid? : All comes down to trust models
- ☸ Cloud is an iteration of a platform and an operational model, approach it as such and manage risk appropriately
- ☸ **Focus on the data. It's what we're all concerned with in the first place.**

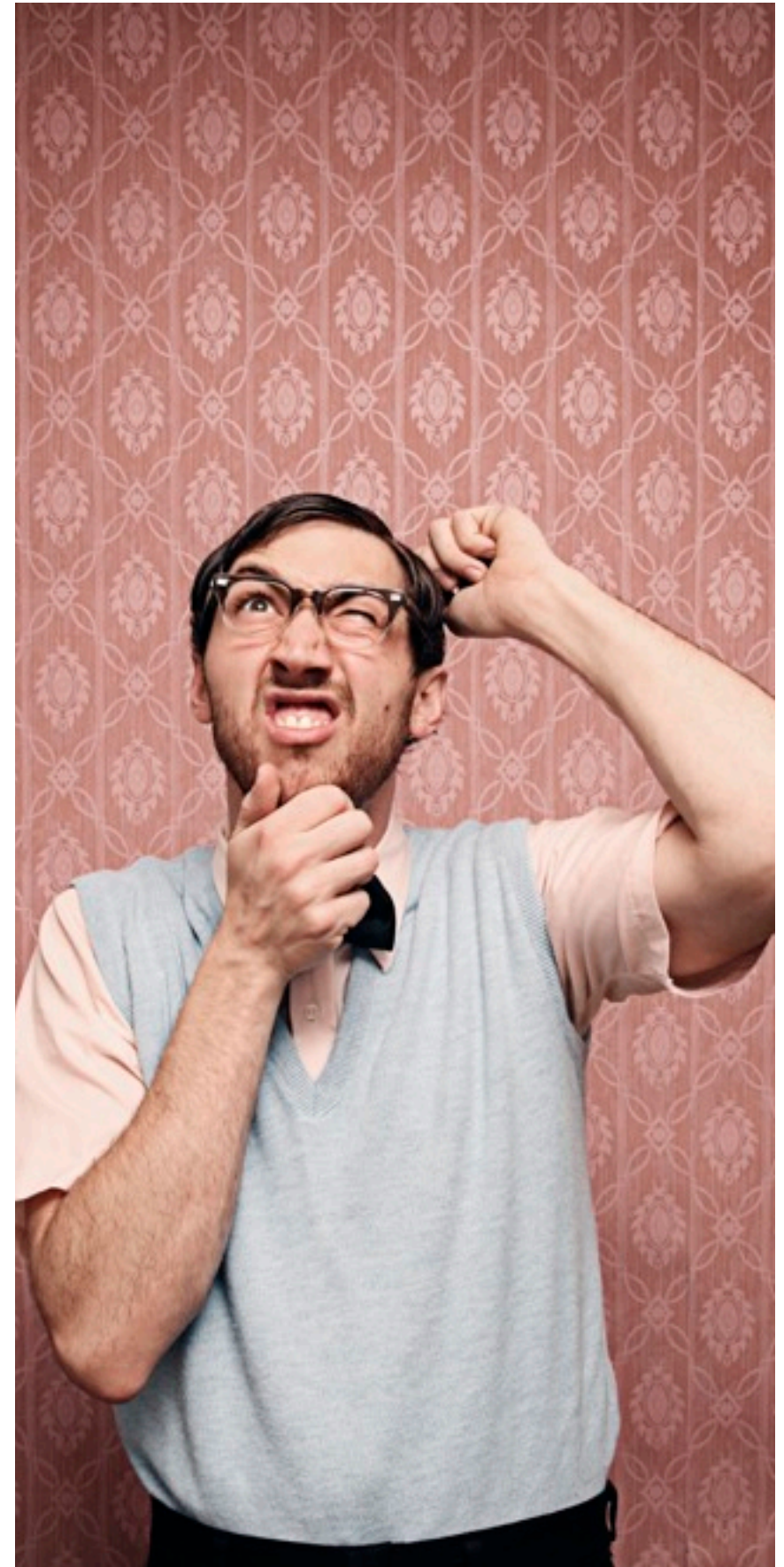




So What Will Cloud Bring Tomorrow?



Does It Really Matter?





What Are You Doing
To Secure What You
Have Today?



So, Can We Trust The Cloud?





Can You Afford Not To?



Find Out:



www.cloudsecurityalliance.org



<http://www.enisa.europa.eu>

