

# Cloud Computing and the Lessons from the Past

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# Agenda

- ✪ Introduction
- ✪ What is driving Cloud Computing today
- ✪ Defining Cloud Computing
  - ▶ Is it just a XaaS stack on demand?
- ✪ Understanding Clouds through the evolution of the datacenter architecture
- ✪ What is still missing? What needs to be done?
- ✪ Using a Cloud Reference Model to identify the gaps
- ✪ Vision for a next generation Cloud-based data center
  - ▶ The case for rethinking cloud services using TMN and FCAPS
  - ▶ Shared resources and telecom reliability, availability, performance and security
  - ▶ Open standards, global interoperability and massive scaling with “Trust”
- ✪ Conclusion



## Defining Cloud Computing ( with apologies to Rentsch )

“

*...Cloud Computing will be in the 2010's what structured programming was in the 1970's. Everyone will be in favor of it. Every vendor will promote their products as supporting it. Every executive will pay lip service to it. Every business will implement it (differently). And no one will know just what it is.*”

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- Paraphrasing Rentsch, T. “Object Oriented Programming”; SIGPLAN Notices; Sept 1982; Vol.17 No.12; P51



# ▶ The Drivers for Cloud Computing

# The Business Drivers for Cloud Computing

1



## Demand created by Web 2.0 Consumer and Internet Applications

Explosion of social networking has created wildly fluctuating demand straining the ability of IT infrastructure to scale

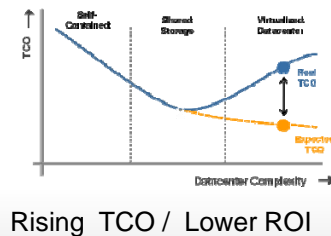
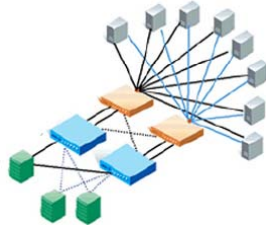
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## Explosion of Digitized Records and Content

Where we store everything ?  
How do we retrieve it reliably ?  
How do we secure it ?  
How do we delete it ?

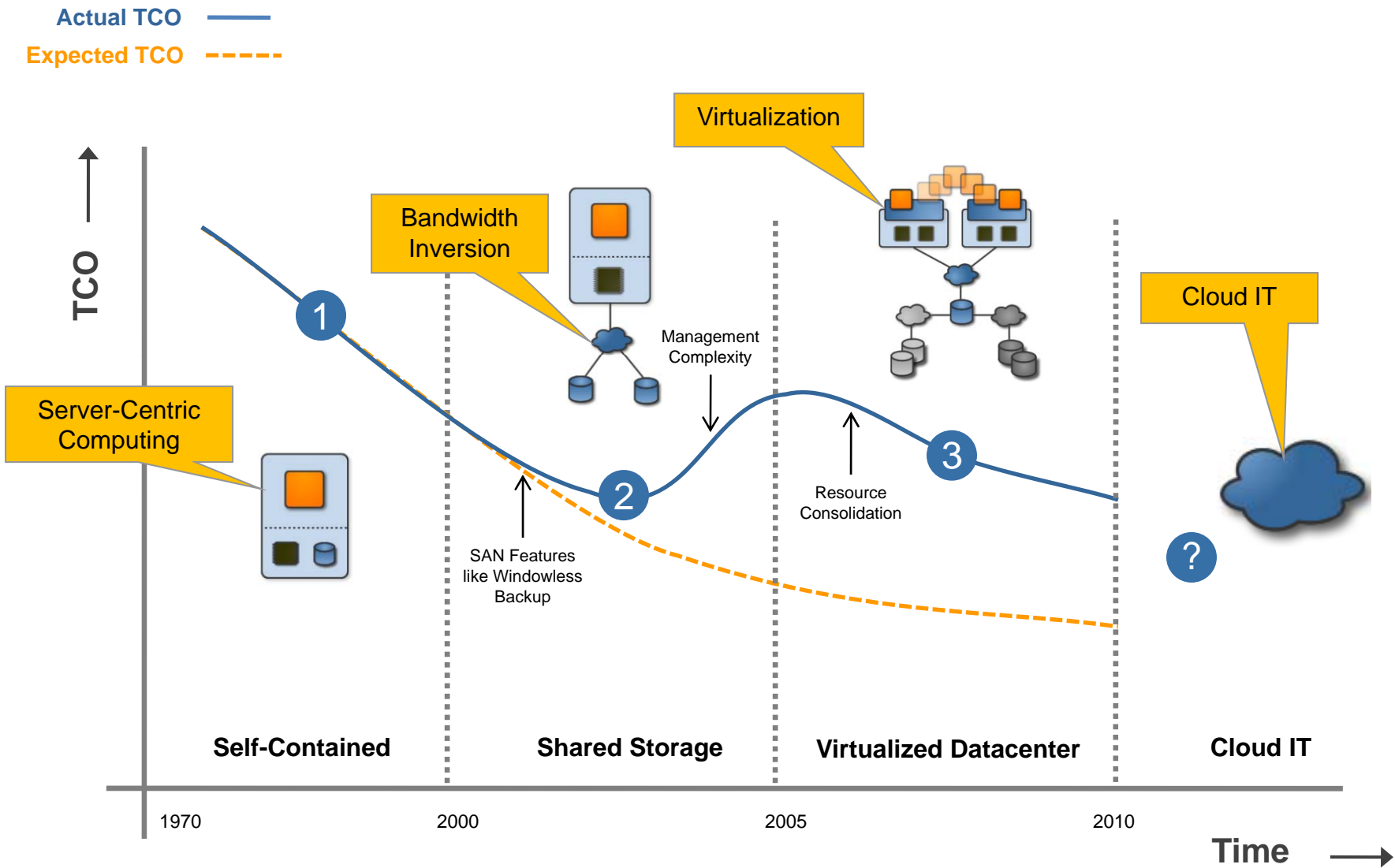
3



## Ever escalating cost of improving ROI and lowering TCO in the Datacenter

SAN, NAS, Virtualization  
HA/DR, Performance Optimization,  
Security

# The Cloud must help reset complexity; TCO is getting out of Control

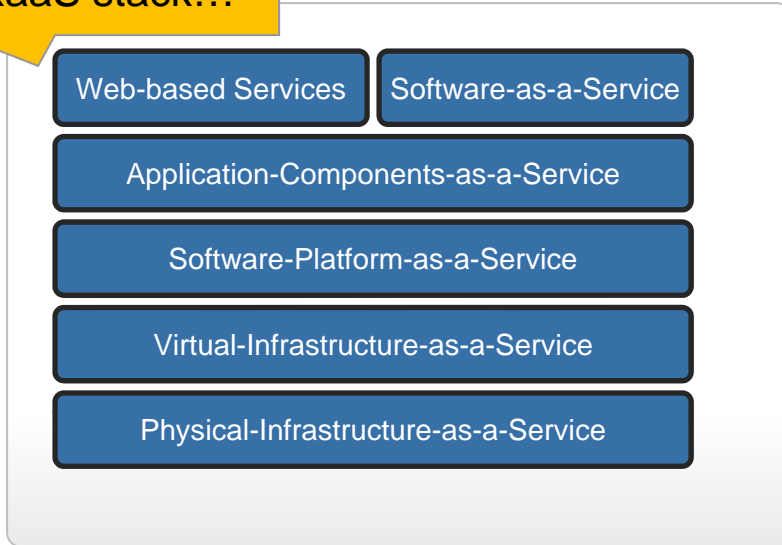




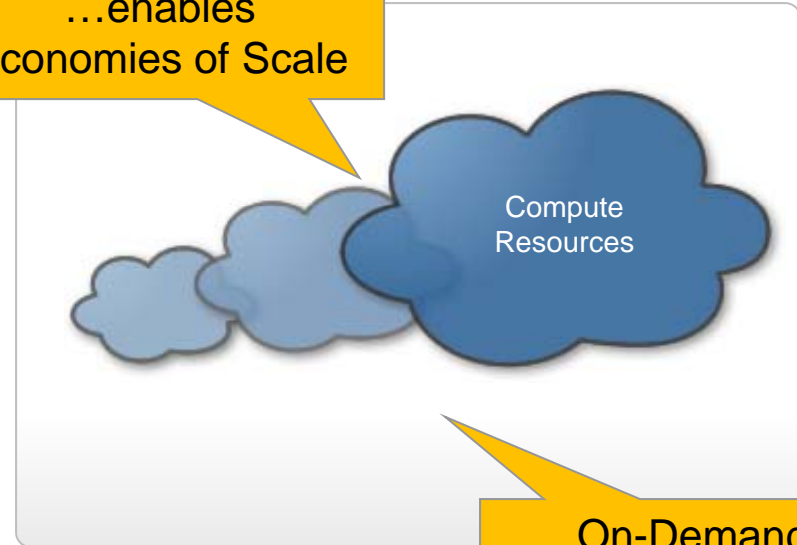
# ▶ Defining Cloud Computing

# Cloud Computing as it is defined today...

A XaaS stack...

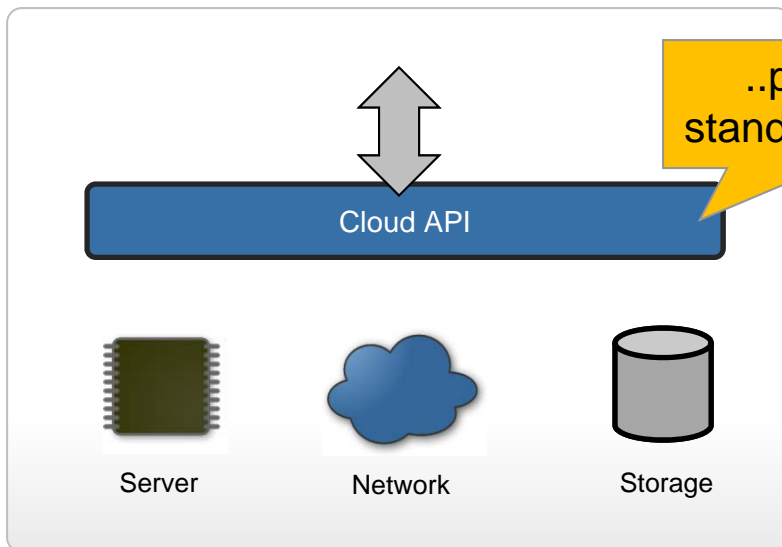


...enables Economies of Scale



...On-Demand Computing

..provides a standard interface

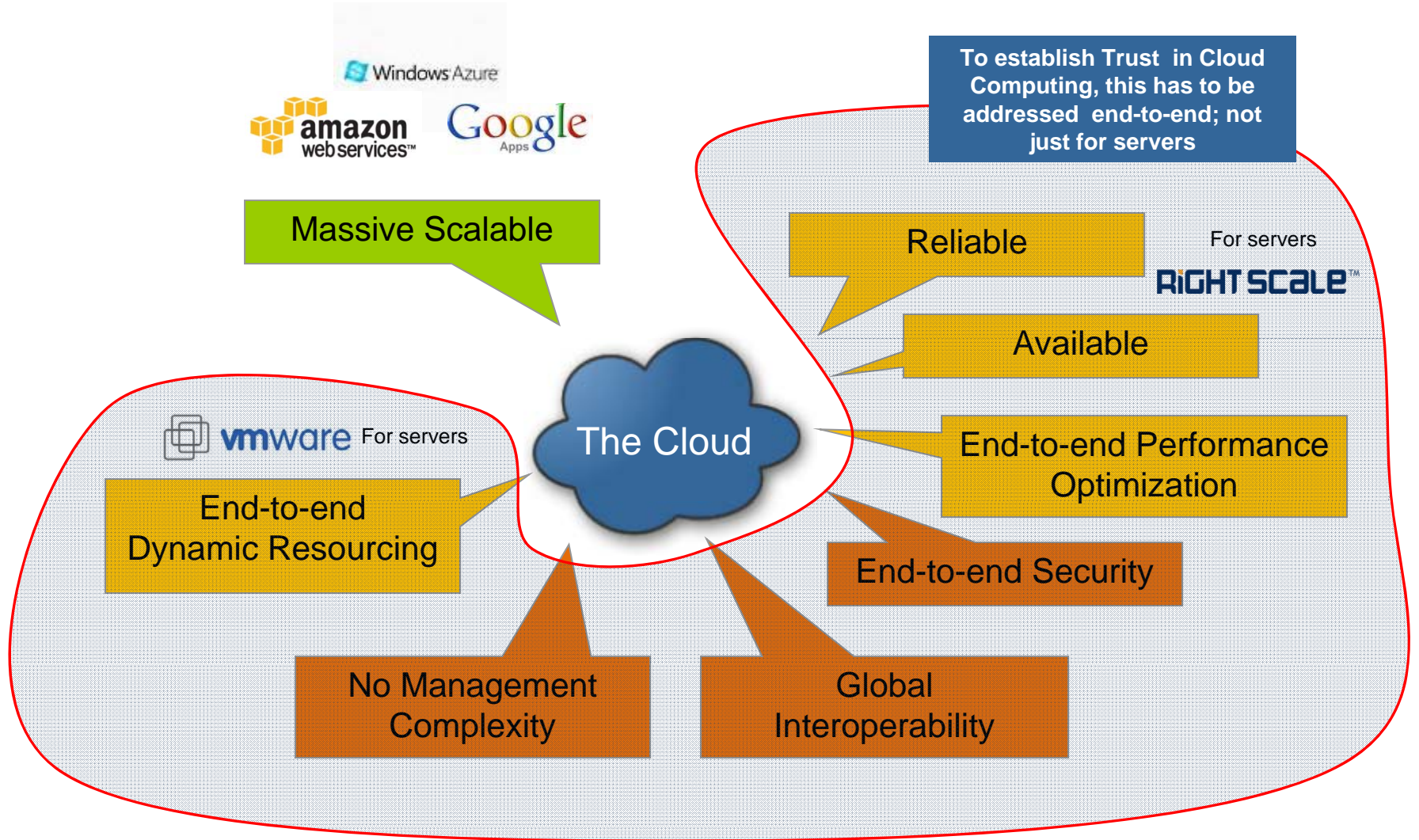



Is that it?

Are we missing something?



# The State of Clouds Today and What is Missing





▶ What are we still  
Missing ?

# The Cloud must be “Trust” –able.

**The New York Times**  
Friday, November 14, 2008

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**Bits**  
Business ■ Innovation ■ Technology ■ Society

August 11, 2008, 6:26 PM

**A Modern-Day Blackout: Gmail**  
By MIGUEL HELFT

UPDATED 6:35 p.m. After about 90 minutes, life for most users

**Performance**  
Will it deliver the required resources and performance when I need it?

**TOP STORIES**  
As of March 02, 2009 04:46 PM

**More Outages in Forecast for Cloud Computing**  
By Jeff Feinman

July 25, 2008 — With the outages occurring in Amazon's S3 cloud storage service and Apple's MobileMe device, analysts say growing pains for cloud computing will lead to further problems.

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**Cloud security stokes concerns at RSA**  
Businesses are adopting public cloud services despite numerous risks

By Jim Greene, Contributing Writer, NetworkWorld

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SAN FRANCISCO — Two words — cloud security — dominated discussion and action this week at RSA Conference 2009.

Throughout the event, attendees — who seemed to number fewer than in recent years — were warned of a broad spectrum of potential danger areas from cloud computing services, including data loss and integrity, compliance, liability, reliability, authentication and information life-cycle management.

"It is a security nightmare, and it can't be handled in traditional ways," said Cisco CEO John Chambers in his keynote address. "You'll have no idea what's in the corporate data center."

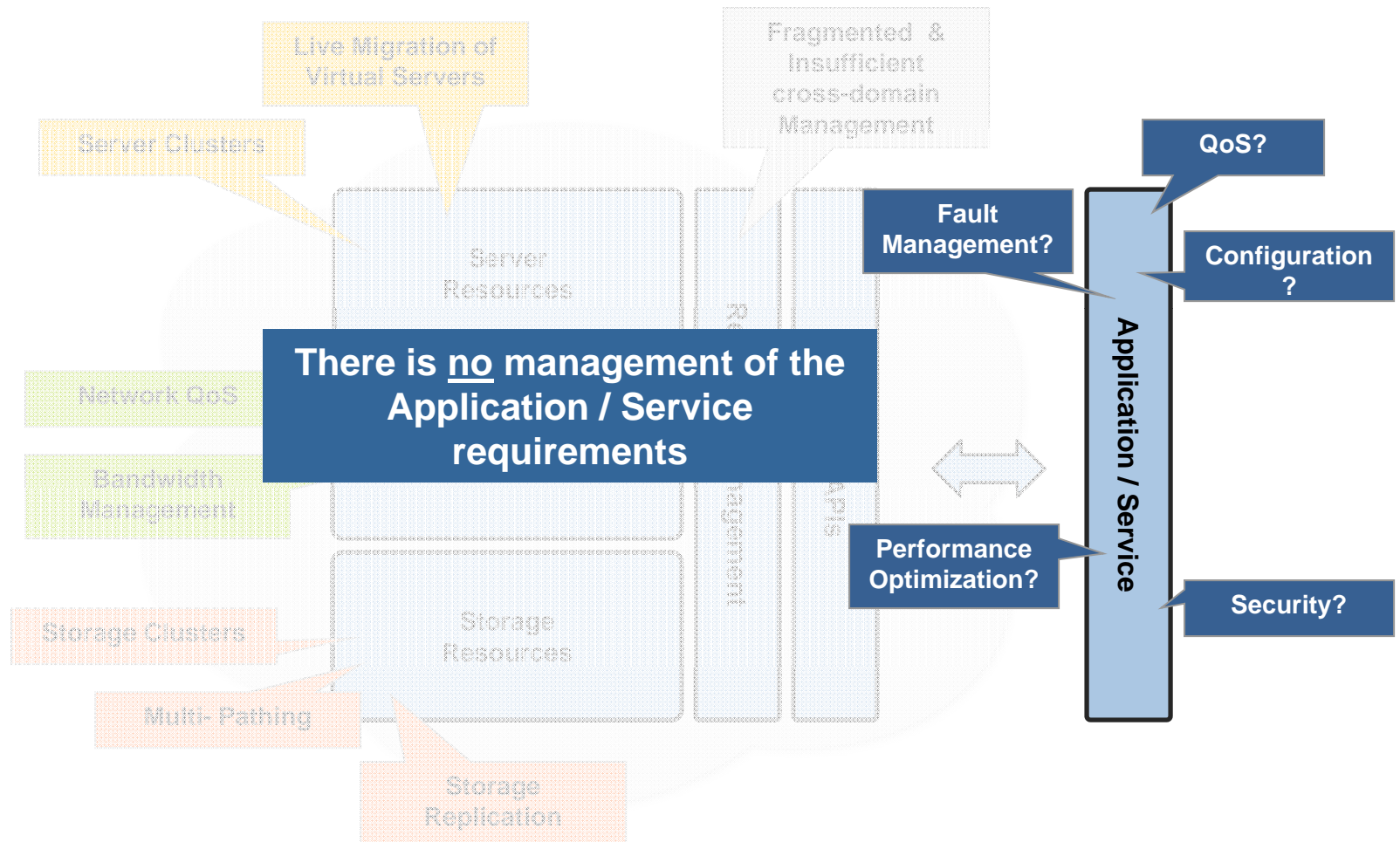
Cloud security clearly lags, experts said, advising that until it catches up, businesses need to understand the dangers, weigh them against the corporate benefits and exercise aggressive risk management.


Developers and Identity Services : Tackling Identity Data with Identity Hub: Download now

**Reliability**  
Can I depend on it? Will it be there when I need it?

**Security**  
Can I trust it?

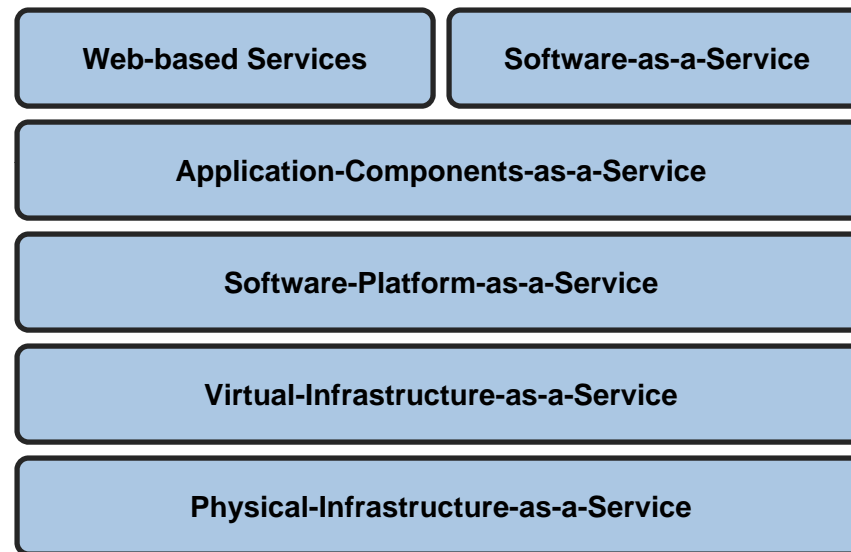
# Datacenter mgmt. today is resource-centric, siloed and not optimal



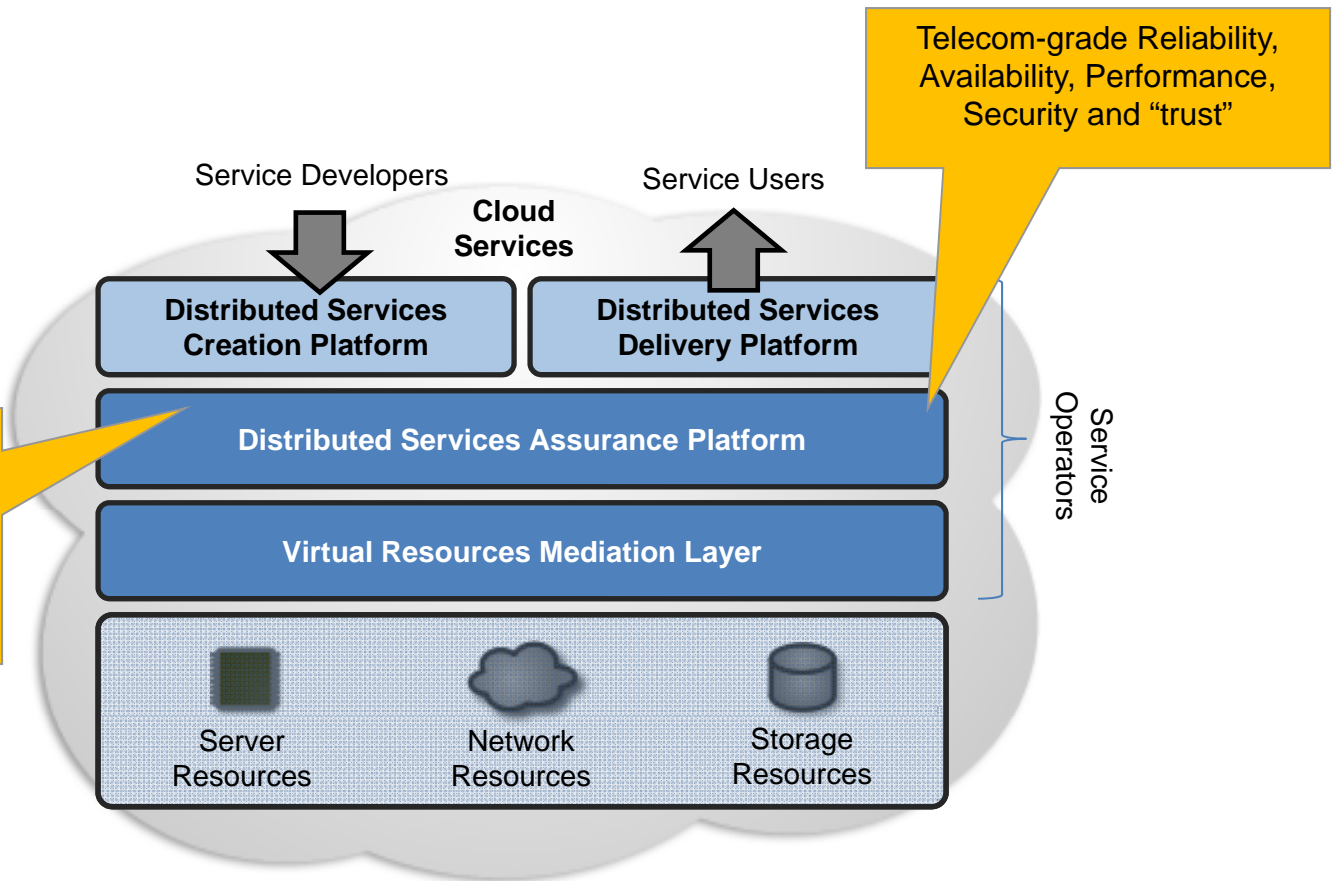
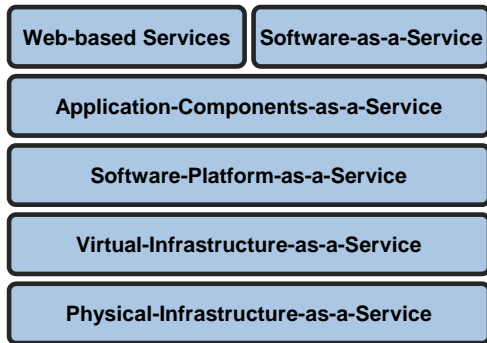


▶ A Reference  
Model for Cloud  
Computing

# Current Cloud Reference Model

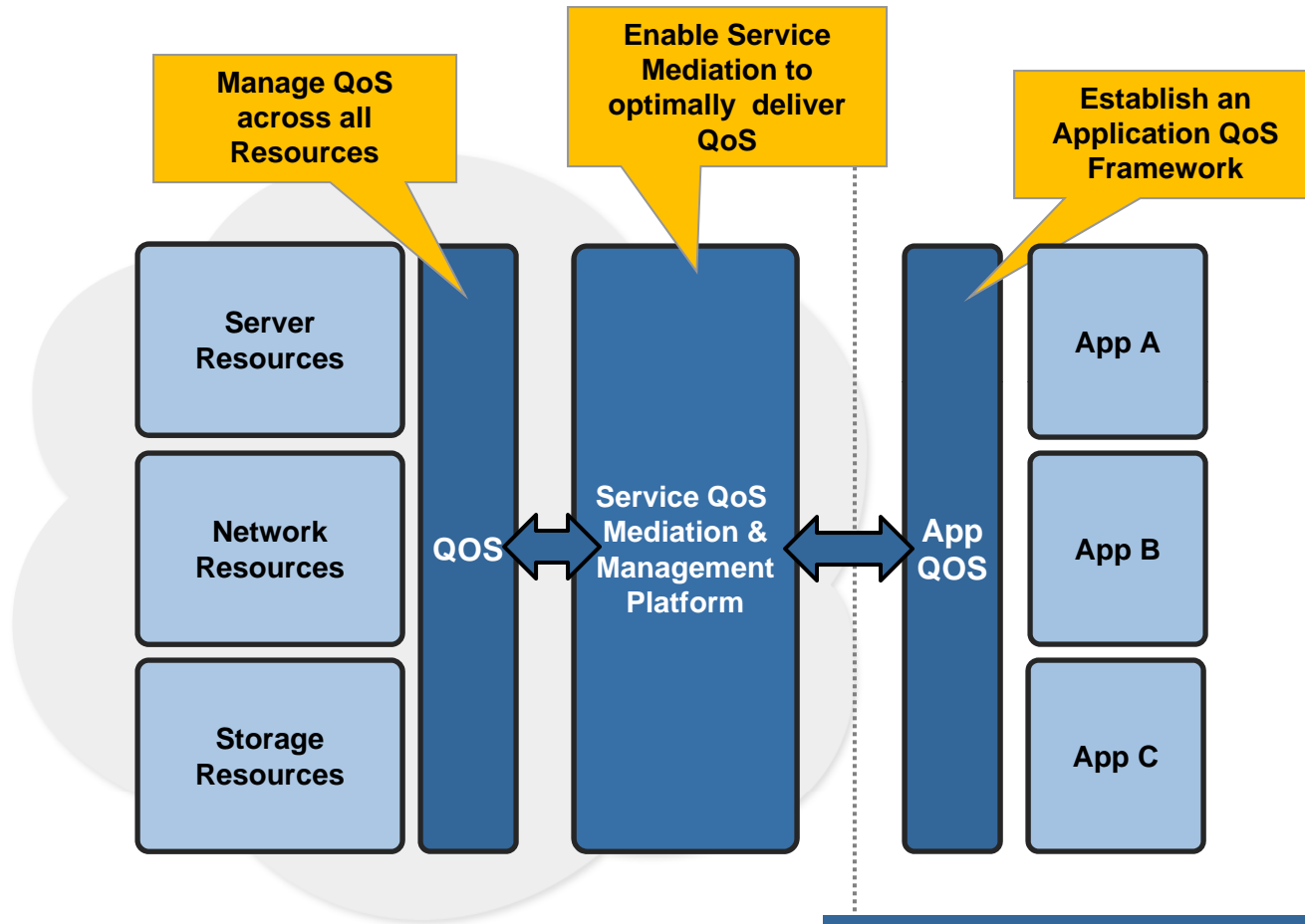


# Next Generation Cloud – More than just a XaaS Stack



Fault, Configuration, Accounting, Performance and Security (FCAPS) Management for both service developers and users on a mass scale with global interoperability

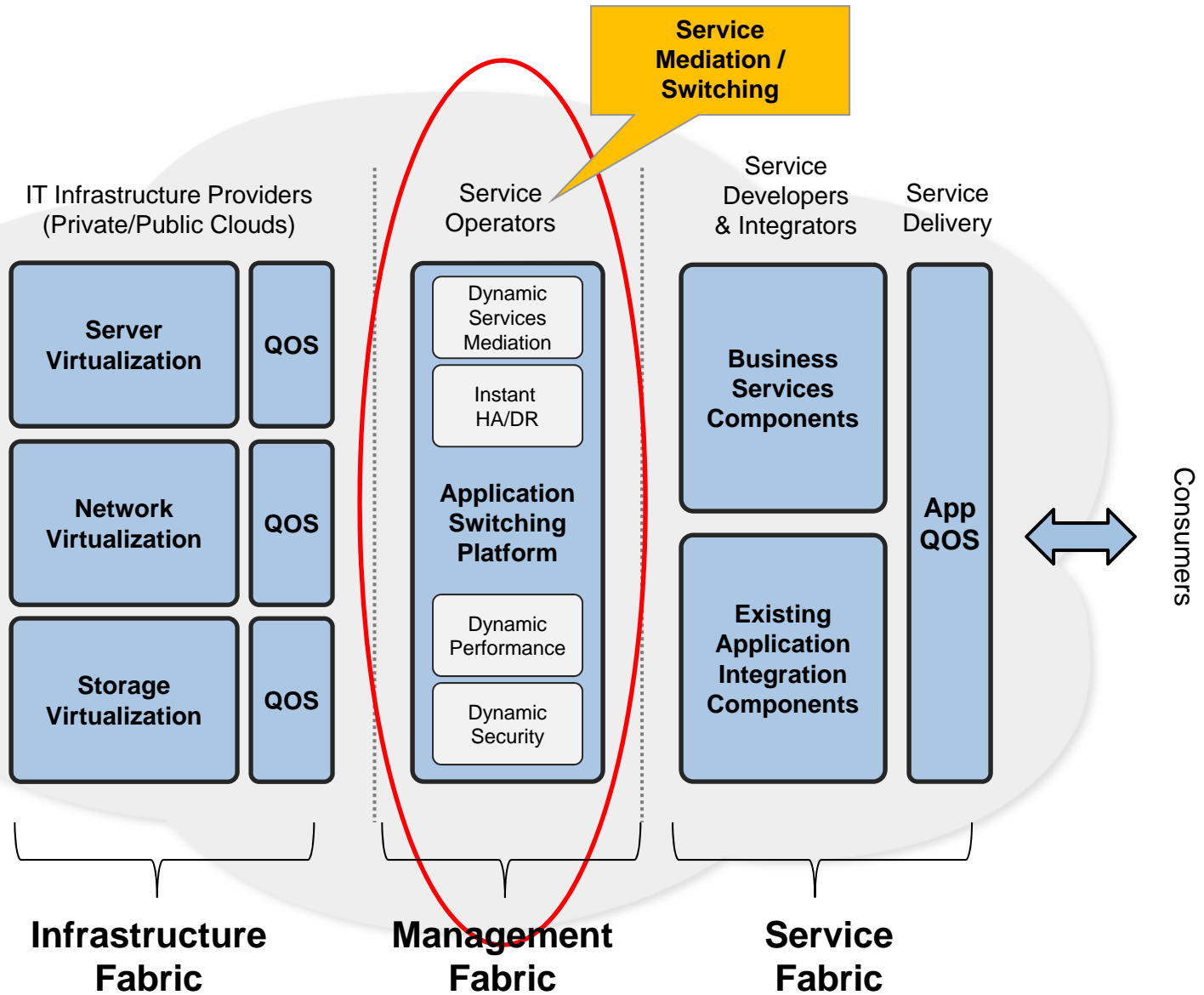
# What do we need to enable “Trust” in clouds?




**We need real-time service mediation between applications and resources based on business priorities**



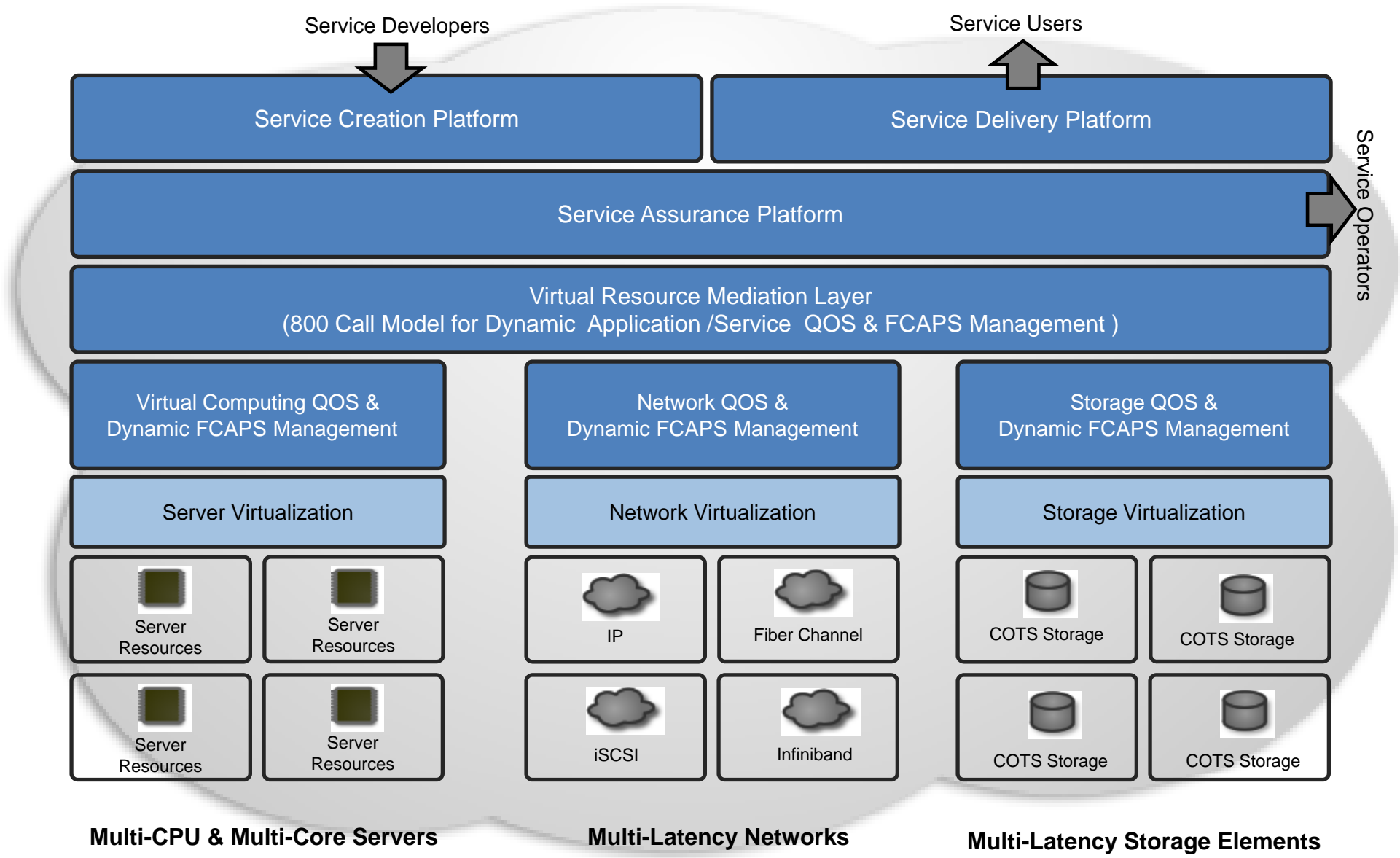
# The Ultimate Cloud / Services Reference Model



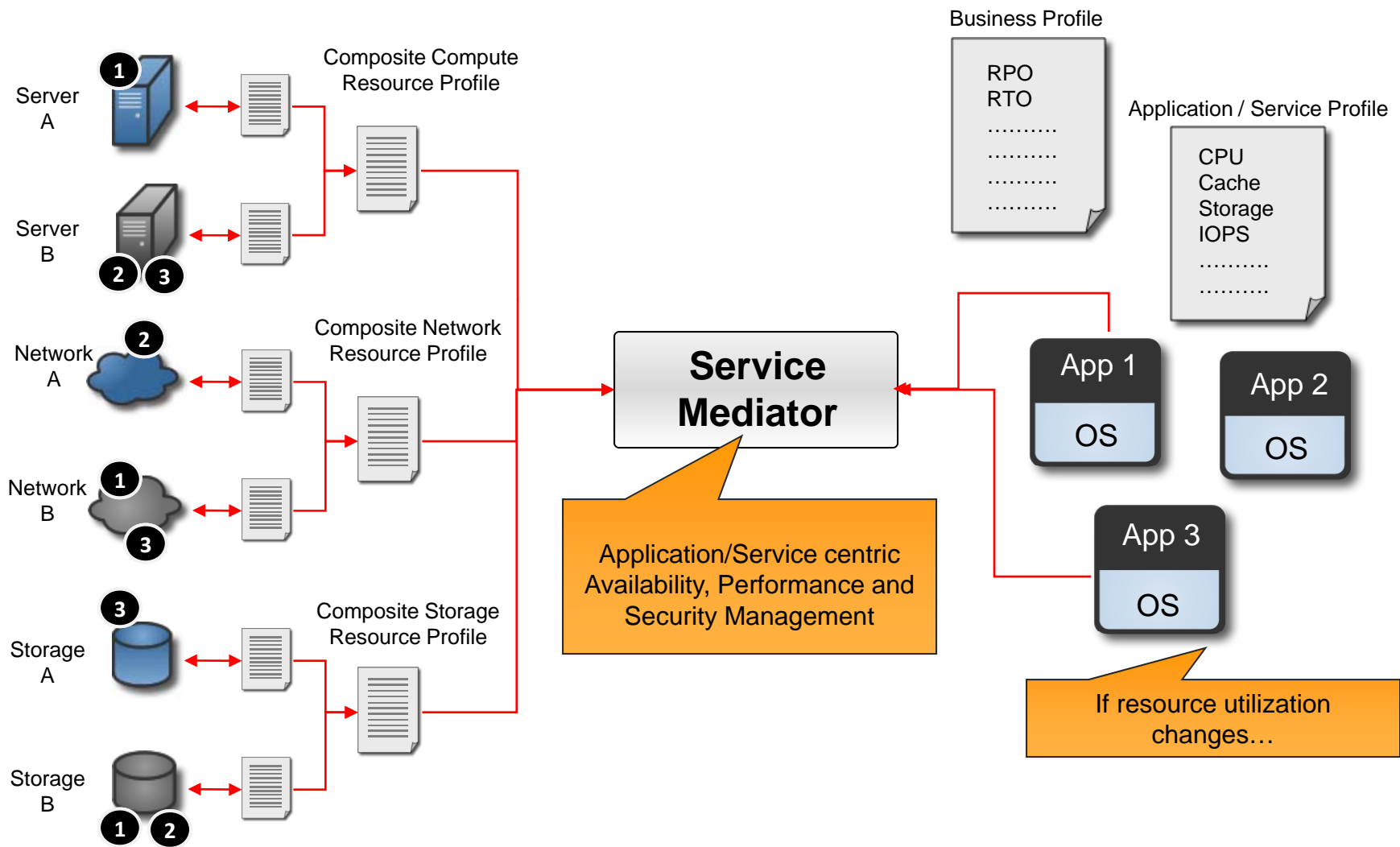


▶ A Vision for the  
Next Generation  
Datacenter

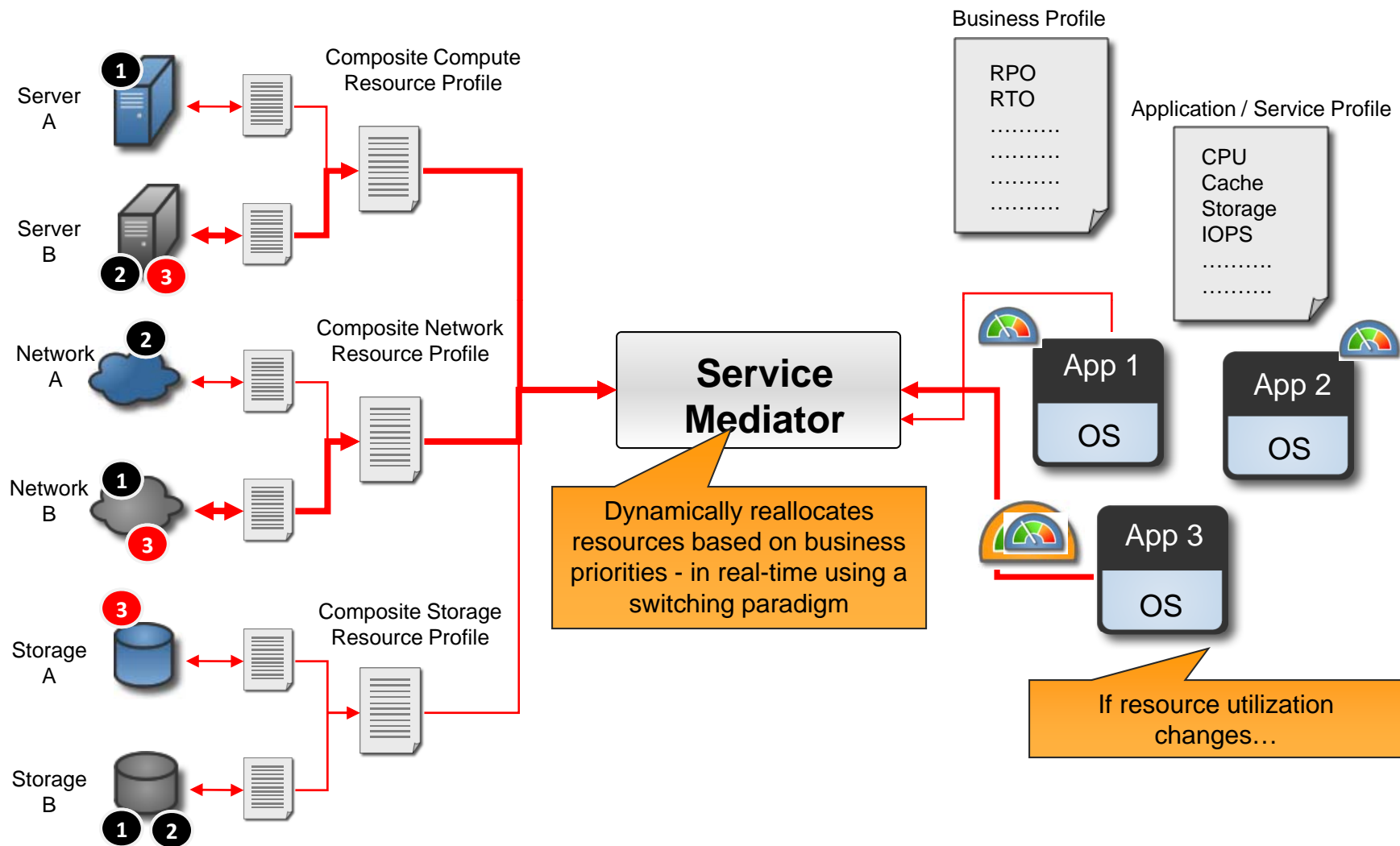
# Vision For a Next Generation Cloud based on Telecom History



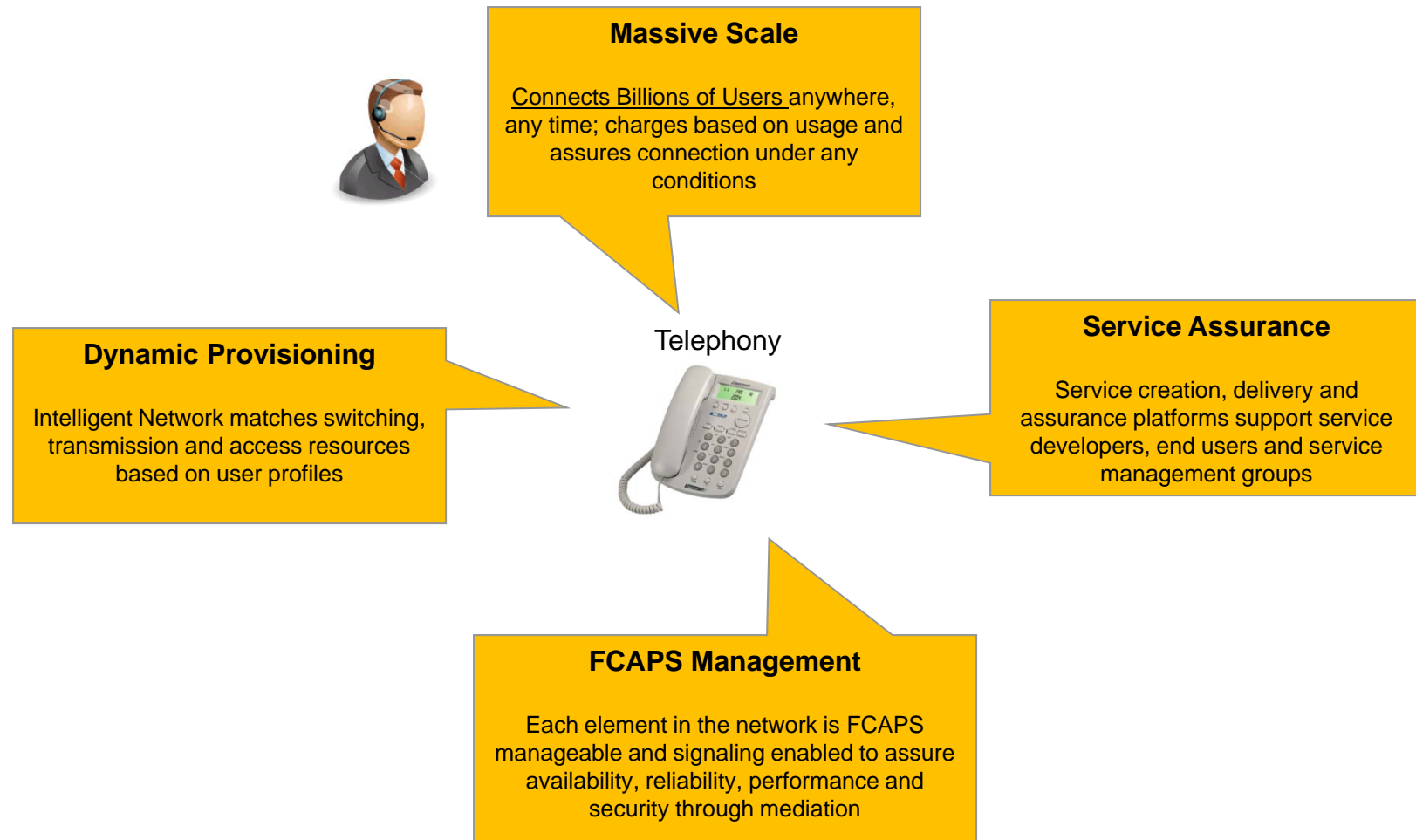
# 1. Create an Application to Resource Map of the Datacenter



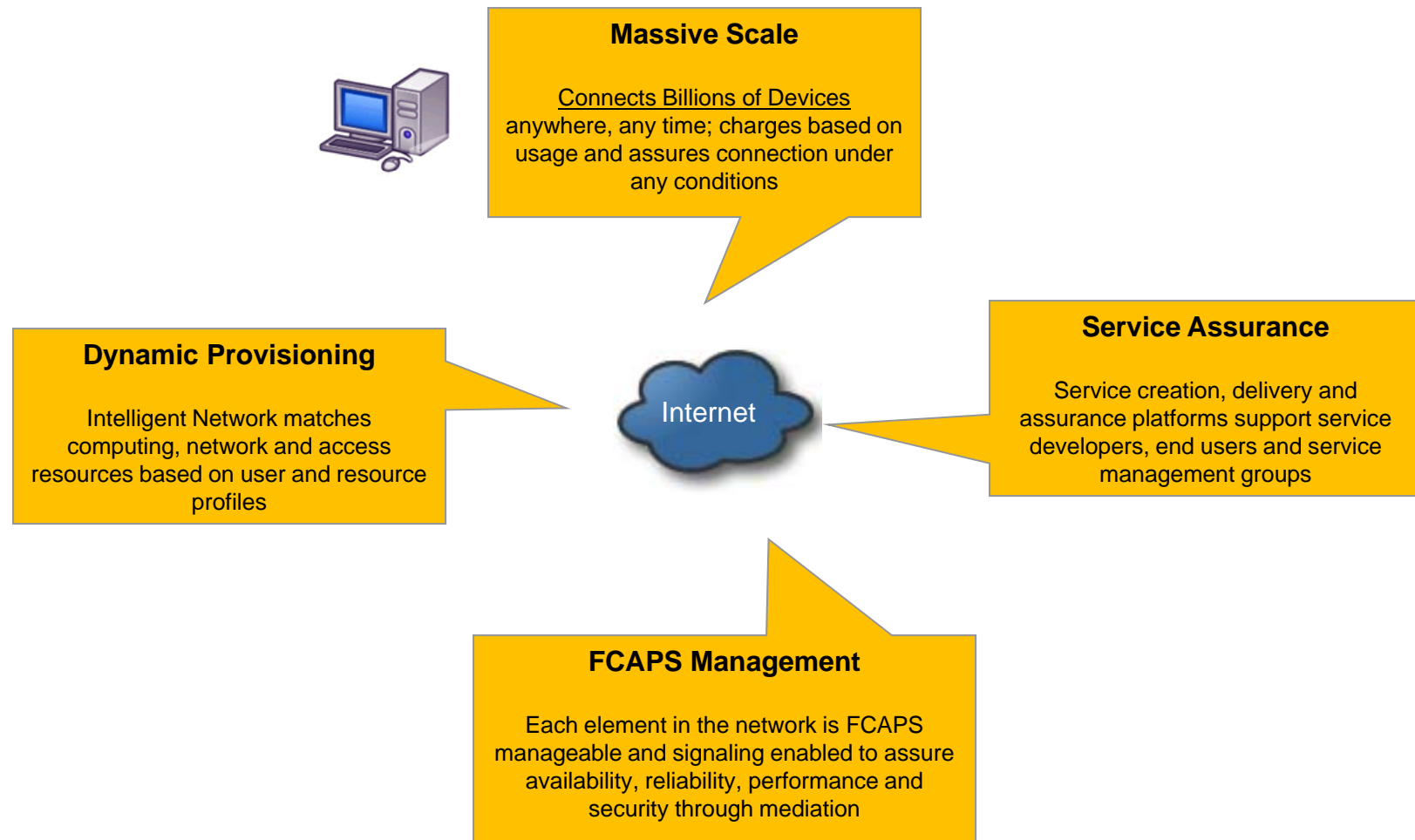
## 2. Use Business Priorities to “Switch” Datacenter Resources



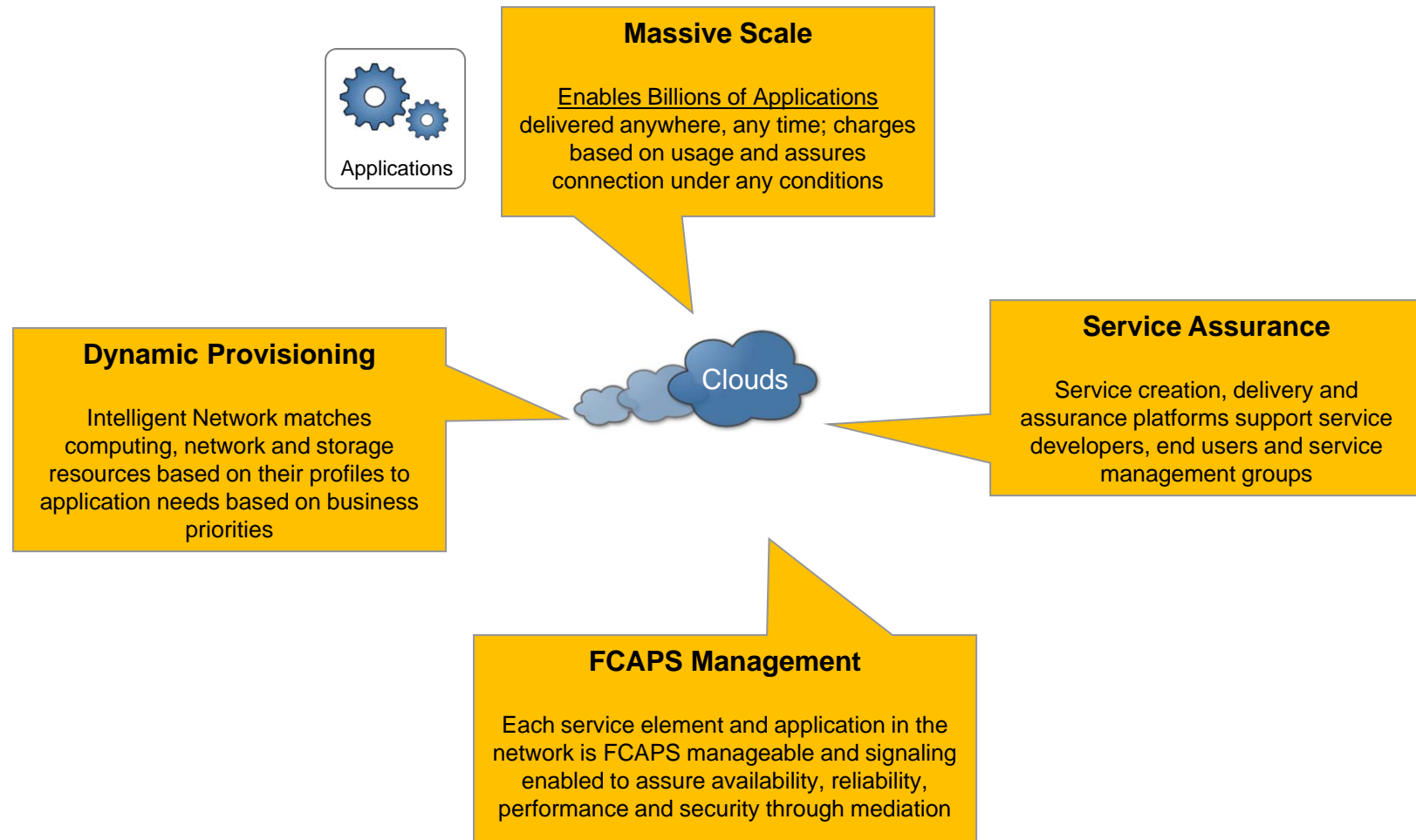
# Shared Resources and Telecom-grade Reliability, Availability, Performance and Security



# Shared Resources and Telecom-grade Reliability, Availability, Performance and Security

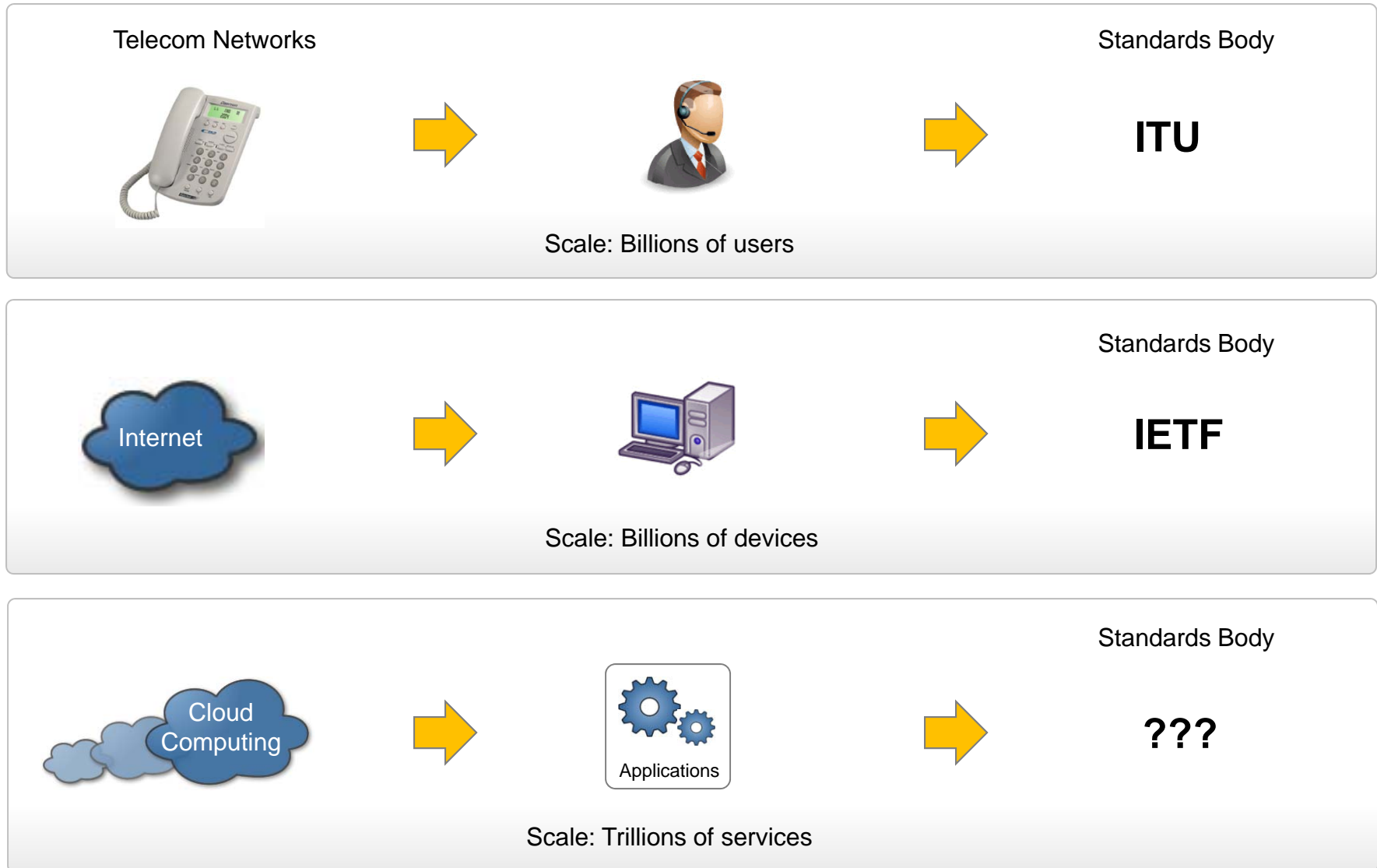


# Shared Resources and Telecom-grade Reliability, Availability, Performance and Security





# Open Standards, Global interoperability and Massive Scaling With “Trust”



## Conclusion

- ✦ Bandwidth inversion and new multi-CPU & multi-Core computing architectures make a truly distributed and networked computing model possible
- ✦ Management complexity is the last straw that breaks the IT infrastructure. The Cloud revolution will break the cost escalation cycle of improving ROI and lowering TCO through simplification.
- ✦ Opportunity exists for rethinking where the intelligence for infrastructure resource and application management should reside. It should be in the network and not duplicated in the server, network and storage as it is today



It is all about application-to-spindle  
management on demand !!

We believe that the Cloud is transformational  
and it will help you achieve IT Nirvana !

# Thank You!

{ Questions }

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