

# Building a Secure and Compliant Cloud Infrastructure

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# Why Are We Here?

## Expanded Enterprise

- Data access anywhere, anytime
- Traditional IT perimeters have disappeared
- New technologies = New complexities = New opportunities

## Cloud Computing

- A new frontier
- New insecurities
- Stringent regulatory compliance

## 8-Step Journey to a Secure and Compliant Cloud

- Determine technology requirements
- Determine security requirements
- Determine policy requirements

# Cloud Insecurity

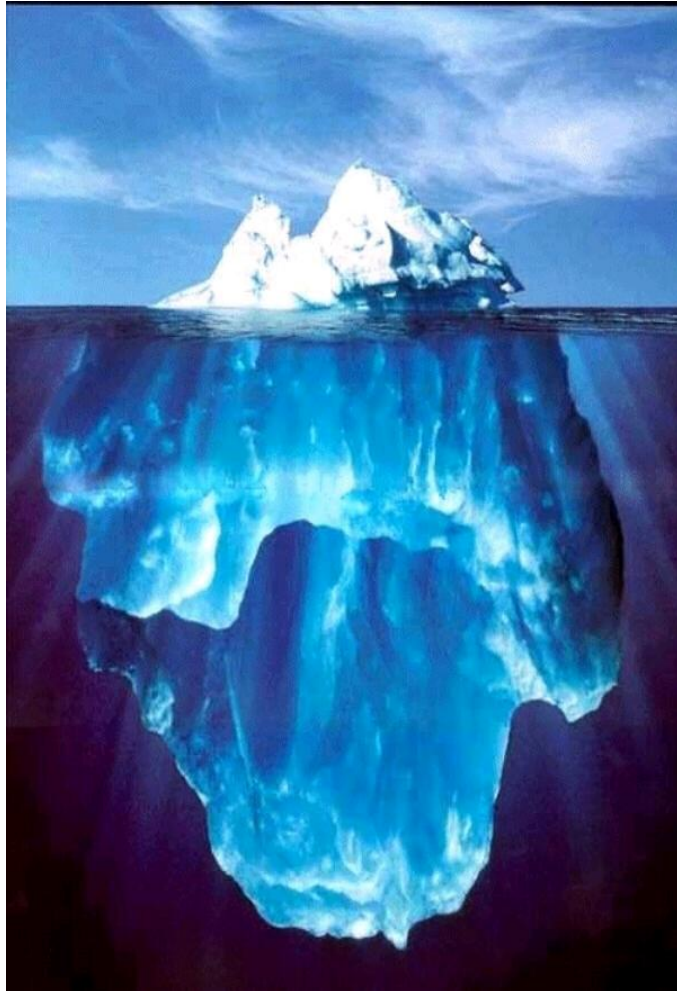
- Uptime
- Seamlessly scalable
- Shared resources
- Logical separation
- Location agnostic
- Co-located rivals



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**The cloud is a magnet for hackers!**

# The Cloud Paradigm



## You see:

Hosted applications

## You don't see:

Virtualization

Elastic workload

Chargeback / billing

Audit and log monitoring

Continuous compliance

Data(base) tenancy

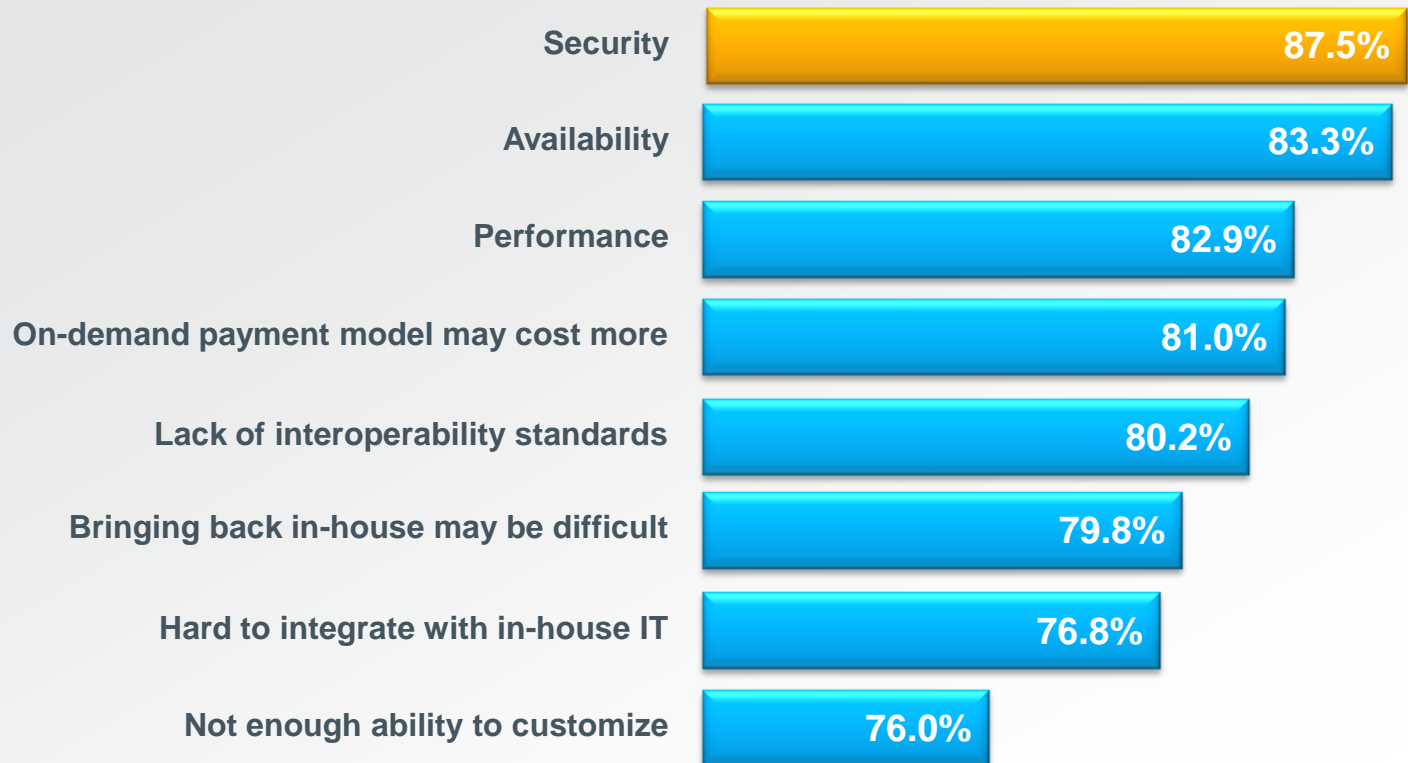
High availability

...

# Security Tops Cloud Concerns

Q: Rate the challenges/issues of the 'cloud'/on-demand model

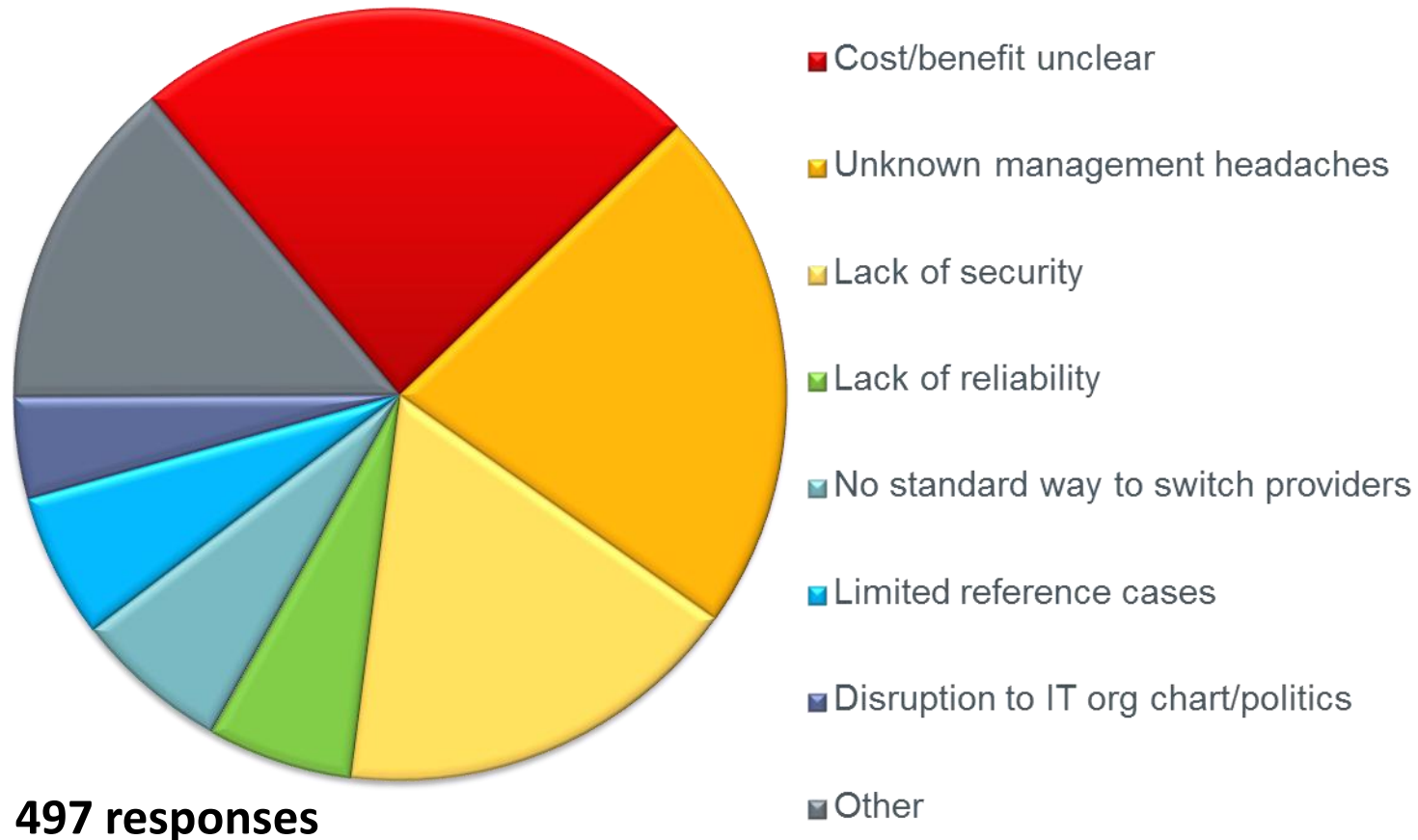
(Scale: 1 = Not at all concerned; 5 = Very concerned)



(% responding 3, 4, or 5)

Source: IDC eXchange, New IDC IT Cloud Services Survey: Top Benefits and Challenges, (<http://blogs.idc.com/ie/?p=730>) December 2009

# What is the Biggest Barrier to Adoption of Cloud Services?



Source: Tech Target: Cloud Computing Readership Survey, 2009

# Cloud Architectures and Models

## ESSENTIAL CHARACTERISTICS

Broad  
Network Access

Rapid  
Elasticity

Measured  
Service

On-Demand  
Self-Service

Resource Pooling

## ARCHITECTURES

Software-  
as-a-Service  
(SaaS)

Platform-  
as-a-Service  
(PaaS)

Infrastructure-  
as-a-Service  
(IaaS)

## DEPLOYMENT MODELS

Public

Private

Hybrid

Community

# Bridging Security Requirements to the Cloud

## Traditional IT

- Dedicated compute, storage and network infrastructure
- Defined locations for data storage and backup
- Proprietary security controls and policies
- Compliance standards designed for traditional IT



## Cloud Computing

- Complex, shared deployment models
- Varying data location
- Security controls and policies defined by service provider
- Interpretation of compliance standards



# An Eight-Step Journey to a Secure Cloud

- 1 Determine your application's suitability for the cloud



# An Eight-Step Journey to a Secure Cloud

## 2 Classify your data



**Financial**



**Newsfeeds/Blogs**



**Marketing**



**Healthcare/PHI**



**Customer Records**



**Government**



**EU Citizens**

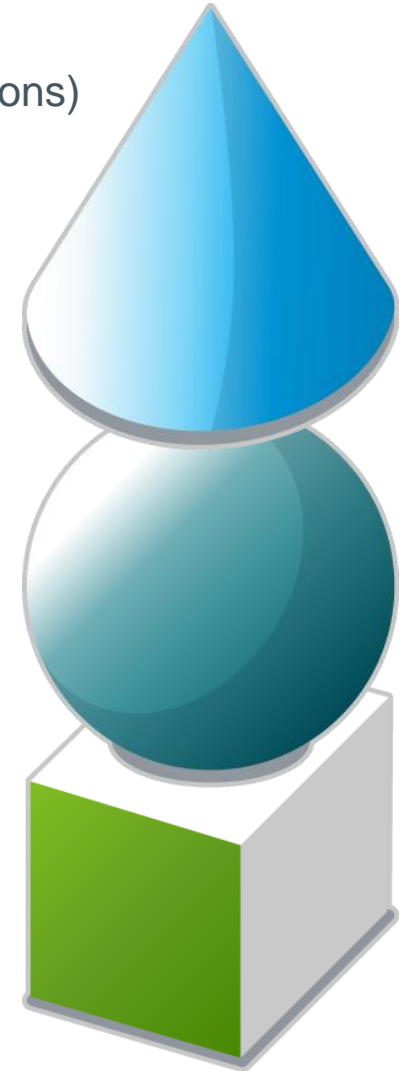
# An Eight-Step Journey to a Secure Cloud

**3** **Classify your cloud type** (Think about applications)

**Software-as-a-Service (SaaS)**

**Infrastructure-as-a-Service (IaaS)**

**Platform-as-a-Service (PaaS)**



# An Eight-Step Journey to a Secure Cloud

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**Select a delivery model** (Think about data classification)

**Private:**

- Self-managed
- Outsourced

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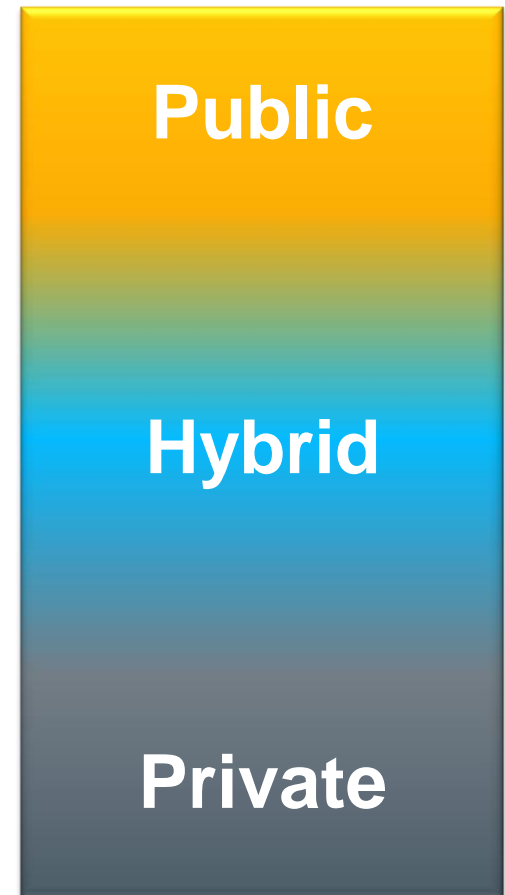
**Public:**

- Commodity
- Enterprise

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**Hybrid:**

- Private + Public
- Private + Exchange
- Private + Customer
- Cloud bursting



# An Eight-Step Journey to a Secure Cloud

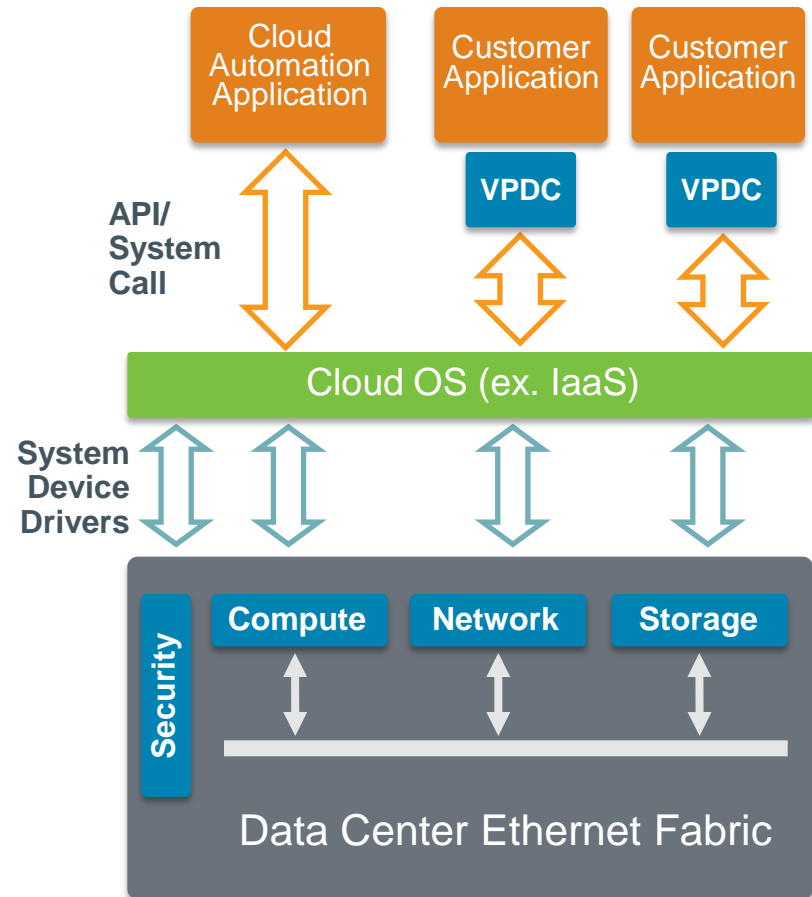
## 5 Specify platform architecture

Compute

Storage and backup

Network and routing

Virtualization vs. dedicated



# Security at the Different Layers

## Applications Layer



End Users

## Management Layer

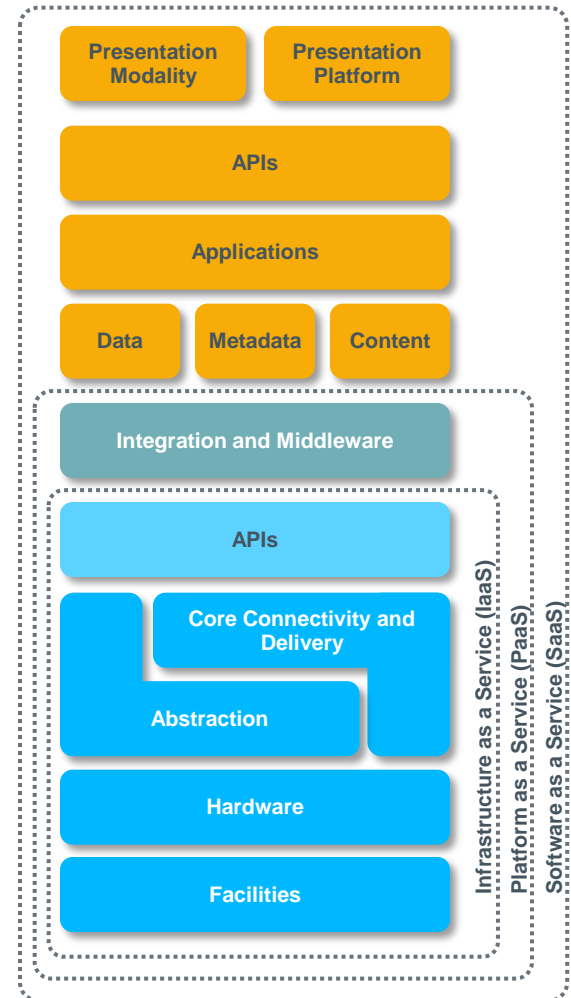


Business Owners

## Infrastructure Layer



IT Administrators



# An Eight-Step Journey to a Secure Cloud

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## Specify security controls

Firewall

Intrusion detection/prevention

Log management

Application protection

Database protection

Identity and access management

Vulnerability scanning



# An Eight-Step Journey to a Secure Cloud



## Determine policy requirements

### Policy Creation and Enforcement

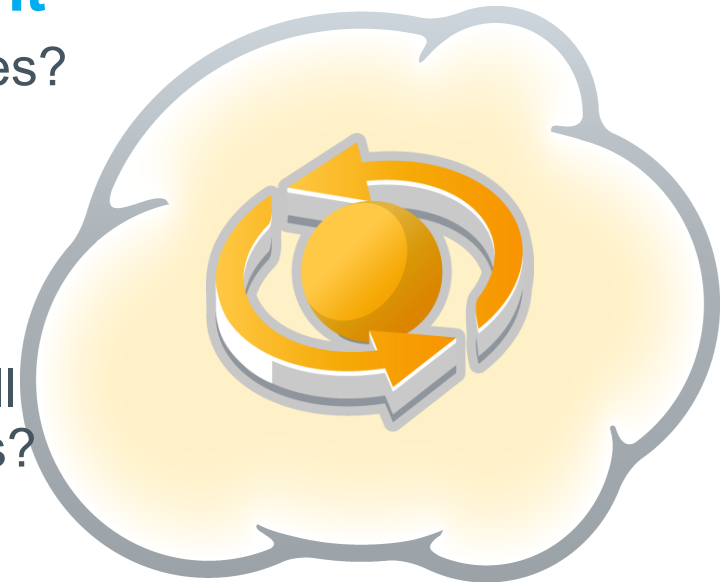
- What are my service provider's policies? Can I specify my own? How do they handle critical events?

### Policy “Bursting”

- If I choose a cloud-bursting model, will my policies “burst” along with my VMs?

### Policy Migration

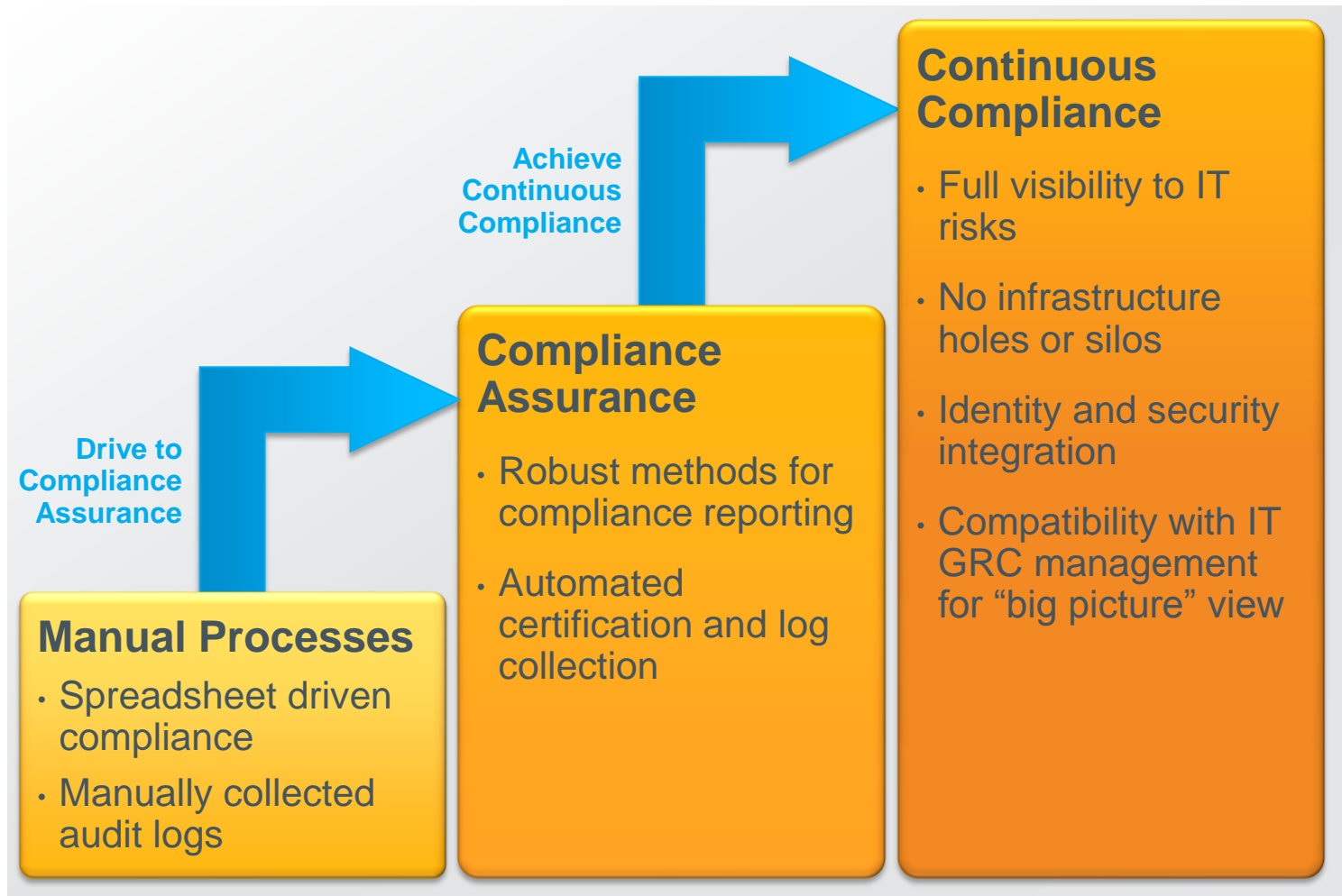
- If I contract for cloud-based DR, will my policies migrate with my VMs?





# Compliance is a Journey

It's Reporting , But It's Also About Managing Risk



# An Eight-Step Journey to a Secure Cloud

## 8 Determine service provider requirements

### Delivery-model integration

Automation

Scalability

Monitoring

SLAs

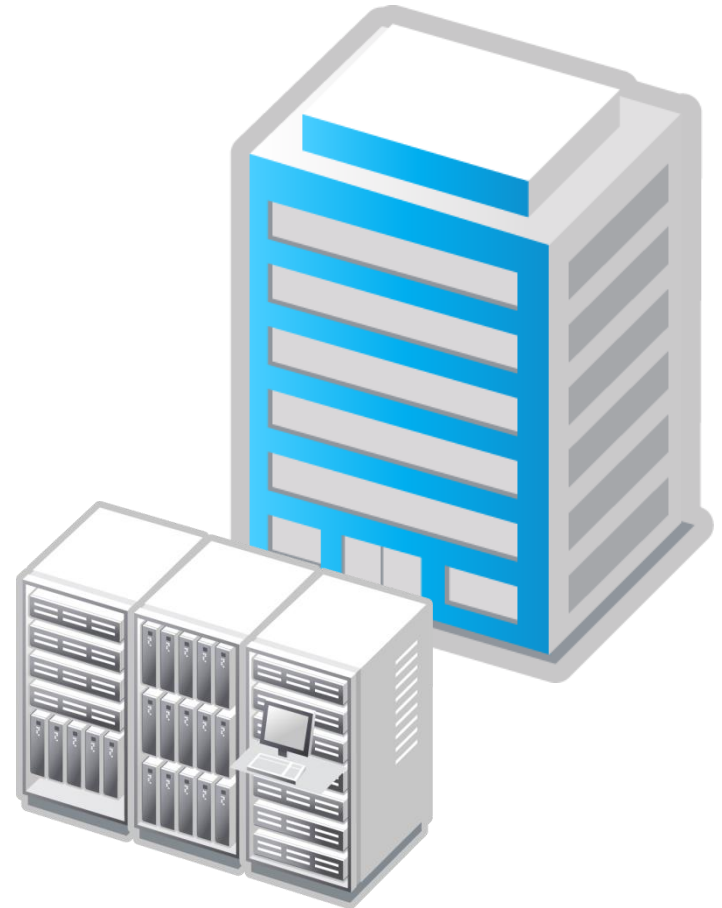
Services

Security controls

Stability

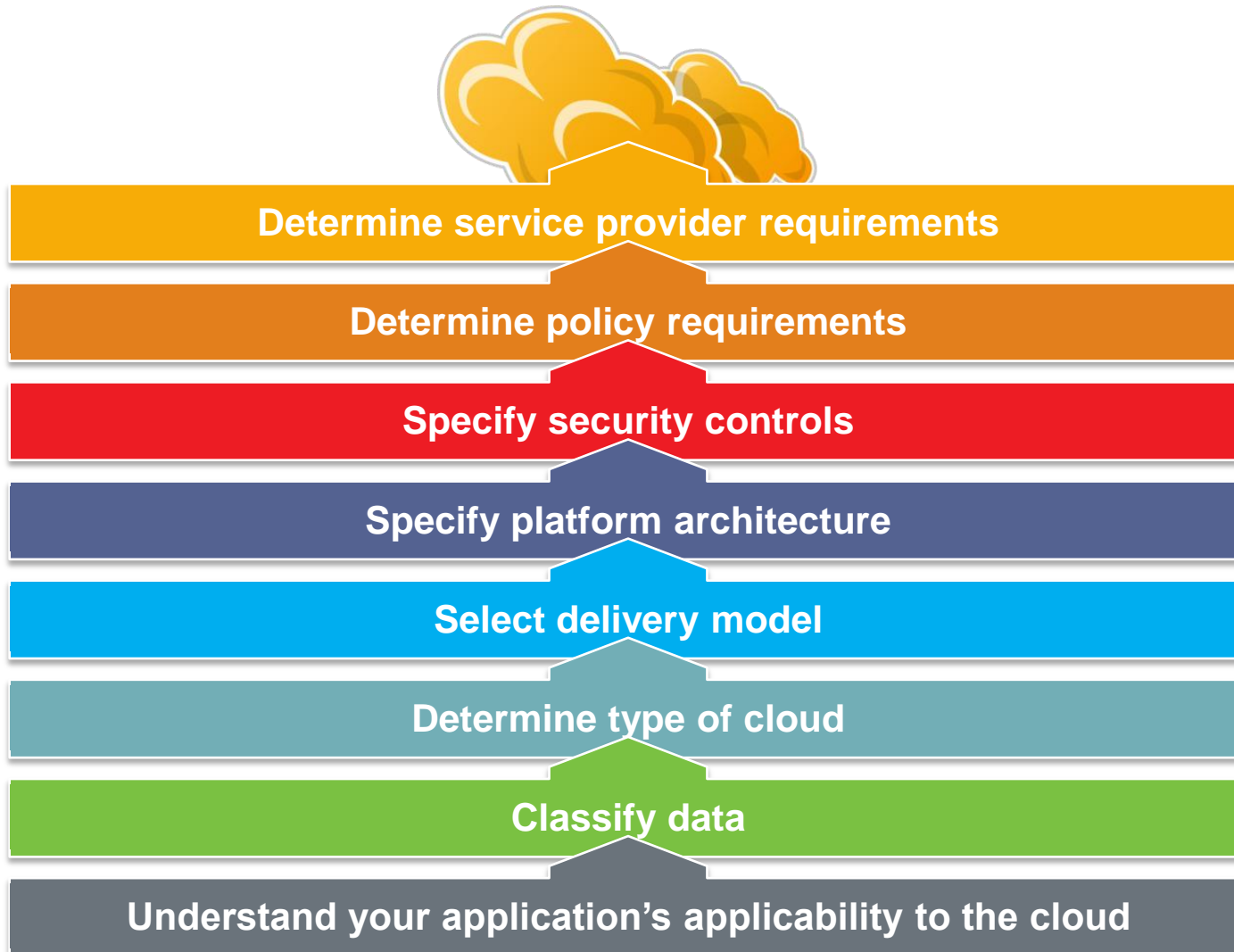
Terms

Compliance

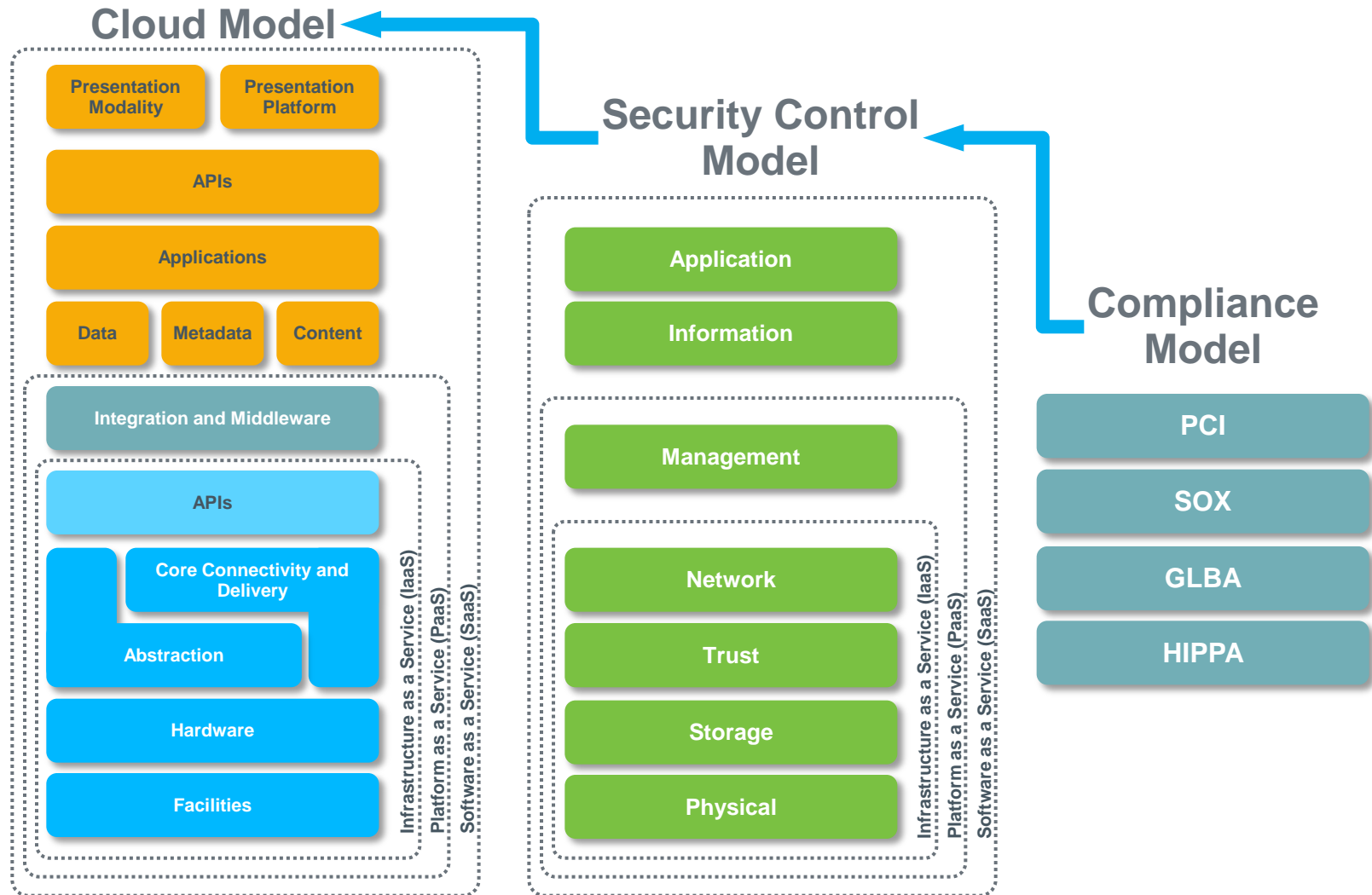


# Journey to The Cloud

## Key Considerations



# Mapping the Model to the Metal



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