Cloud models and compliance requirements… which is right for you?

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Speaker Introduction

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Logicworks

- Cloud / Service / Deployment Models
- Cloud Considerations
- Cloud Trends in Healthcare
- Cloud Adoption
- Security Responsibility
- Understanding your cloud provider
- Q&A

About Coalfire

We help our clients recognize and control IT-related risk, and maintain compliance with all major industry and government standards.

- Our approach and methods validated by more than 5,000 projects
- Accurate and ***independent*** audit and assessments.
- Consolidated Audit Program across PCI/HIPAA/FISMA/SOC/ISO and more

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ZOLL

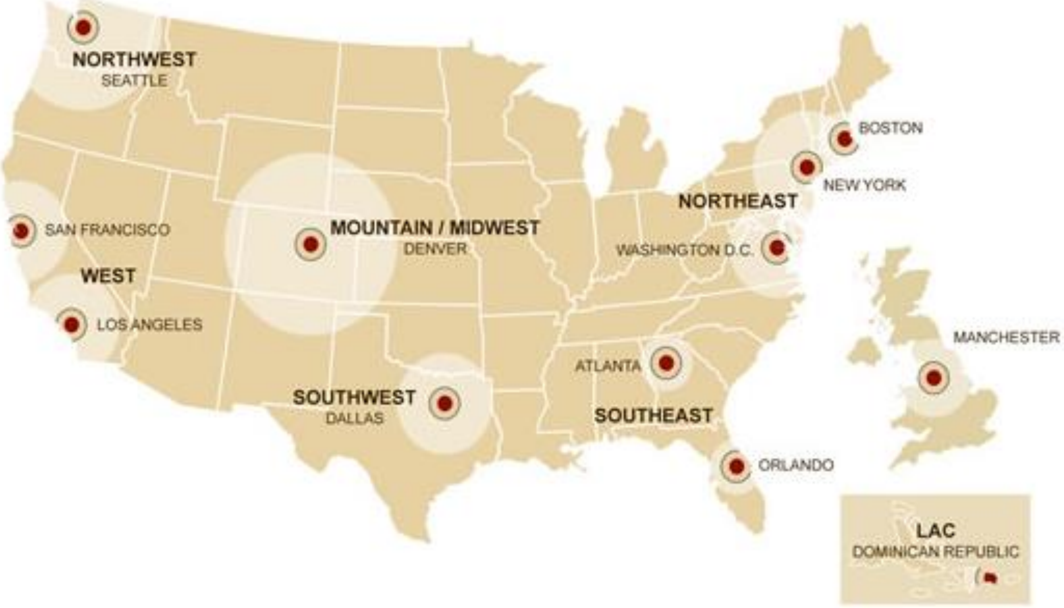
DENVER HEALTH
Level One Care for ALL

PHYTEL

SEATTLE CANCER CARE ALLIANCE

ORACLE

GHX
Global Healthcare Exchange



North Shore LIJ
North Shore-Long Island Jewish Health System

McKESSON
Empowering Healthcare

Epic

Cerner

GENTIVA

dexcom

The Children's Hospital

ClearDATA
HEALTHCARE · COMPLIANT · CLOUD

ADVISORY SERVICES

AUDIT & ASSESSMENTS

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DIGITAL FORENSICS

PENETRATION TESTING

CLOUD & VIRTUALIZATION

APPLICATION SECURITY

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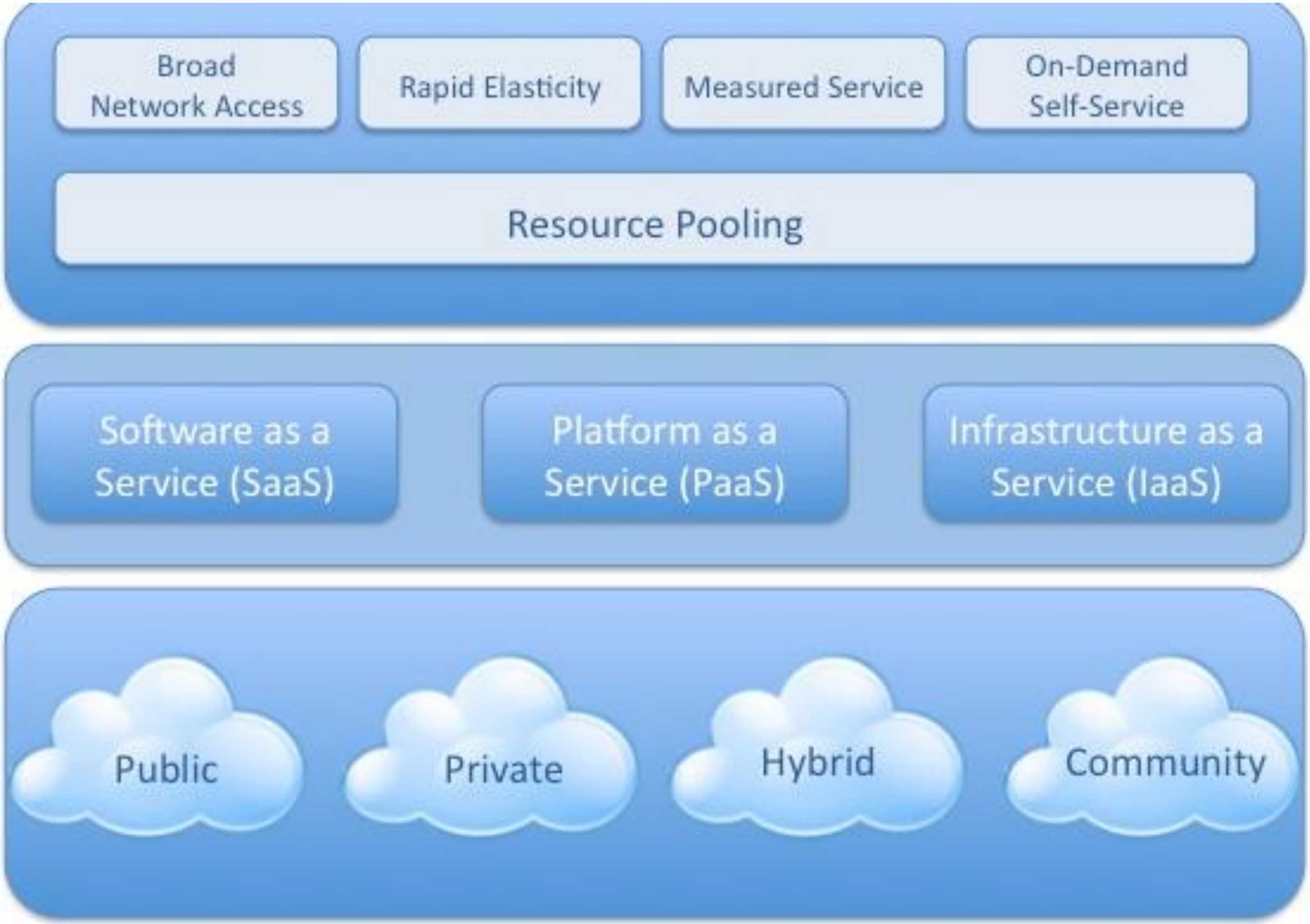
Cloud models



Broad Network Access

Rapid Elasticity

Measured Service

On-Demand Self-Service

Resource Pooling

Software as a Service (SaaS)

Platform as a Service (PaaS)

Infrastructure as a Service (IaaS)

Public

Private

Hybrid

Community

Essential Characteristics

Service Models

Deployment Models

Service Models Defined

NIST Defined

- **SaaS**: Software as a Service – Software provided as a service running in the cloud providers environment
- **PaaS**: Platform as a Service – Application development platform runs on cloud providers hardware and development software
- **IaaS**: Infrastructure as a Service – Hardware – Servers, storage solution, network components, and underlying operating systems

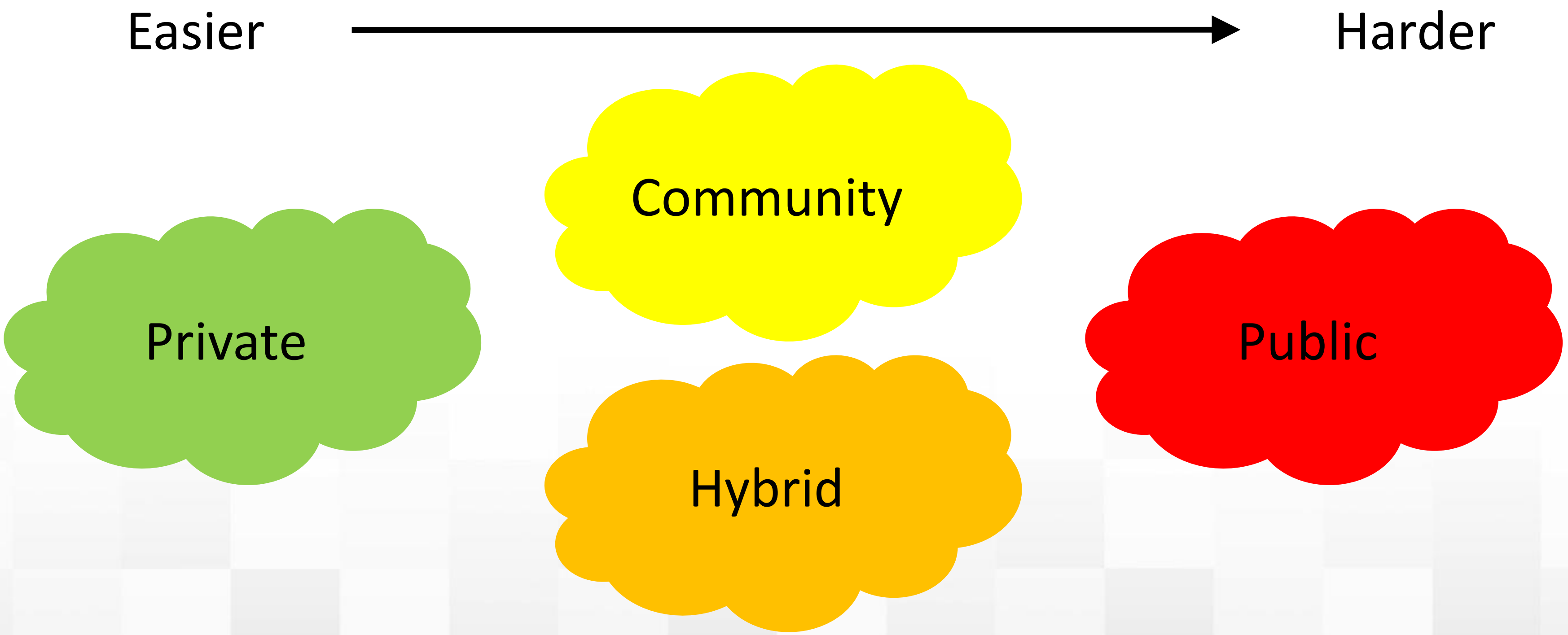
Others

- **DaaS**: Data as a Service – One central location for all data of an organization
- **CaaS**: Communication as a Service – VOIP, Internet Telephony, IM, etc…
- **MaaS**: Monitoring as a Service – Provides monitoring functionality for other services such as applications, servers, or any other IT system or component
- **XaaS**: Anything as a Service

Deployment Models Raise Challenges

Security and Compliance

Accountability and Due Diligence



Easier

Harder

Private

Community

Hybrid

Public

All clouds are not created equal

Dedicated Environment

- ➢ Devices and systems dedicated to your business
  - Reduce Risk
  - Increase Cost

Multi-Tenant Environment – Leverages large servers with multiple clients

- ➢ Devices and systems shared among users
  - Reduce Cost
  - Increase Risk

Multi-Tenant Risk Example

Shared Database with multiple clients' data

- Application Error
- Database Corruption

Are Controls in place such as:

- SDLC (System Development Life Cycle)
- Authentication
- Access Rights
- Data Verification

If the controls aren't in place:

- Your data is exposed to other cloud vendor clients
- Other cloud vendor clients' data appears in your environment

➢ **What is the impact?**

➢ **Is it significant?**

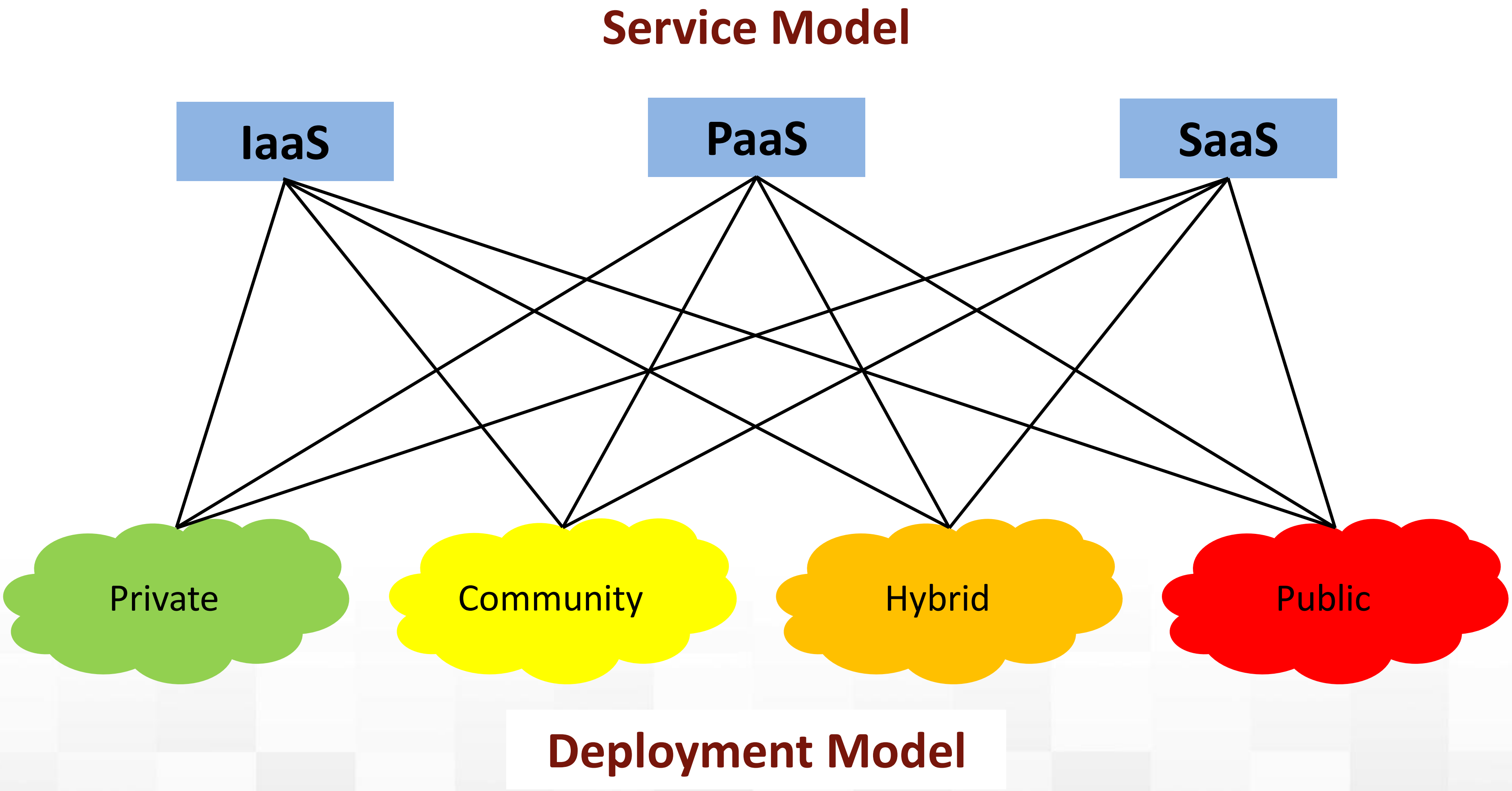
Which cloud is right for you?

Weighing Cloud Service and Deployment Model and Your Environment

YOU MUST CONSIDER:

1. **How critical the data and applications are to your business**
2. Regulatory and/or Data Protection Requirements
3. How integrated cloud services need to be with enterprise functions both:
   - In-house
   - Outsourced
4. Other factors important to your business

Combinations



Service Model

IaaS

PaaS

SaaS

Private

Community

Hybrid

Public

Deployment Model

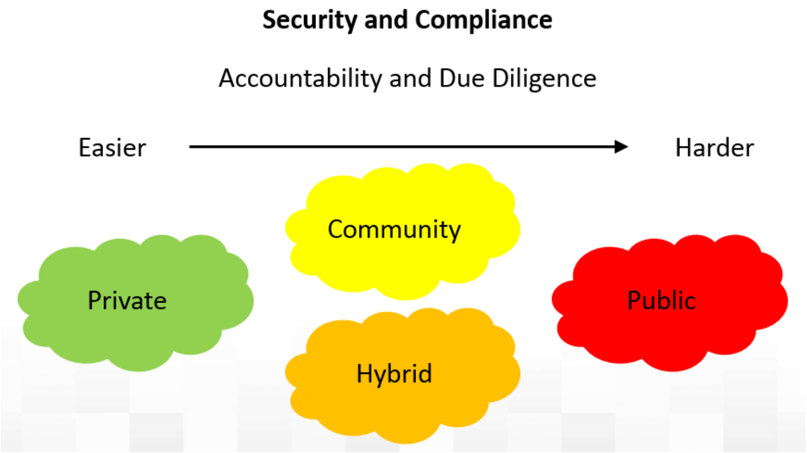
Benefits…

- **Reliability -** The inherent resiliency of the cloud provides a higher degree of redundancy and continuity support than is typical
- **Cost Effective -** Resource pooling for ‘Utility’ (eMail, Collaboration, etc.) functions allows lower cost when provided on a large scale basis
- **Scalable -** The ability to meet increased infrastructure needs faster
- **Physical Security -** Large scale cloud hosting takes place in facilities that provide a better physical environment and security than most SMB data centers
- **Compliance* -** Controls aligned to regulatory requirements (HIPAA, GLBA, PCI, etc.) and control frameworks (NIST 800, ISO 27000, Cobit, etc.)
- **Audits* -** Likely to have one or more types of control reports that have been independently tested by a third party (PCI, HIPAA, FISMA, SSAE 16, etc.)

* You are still Accountable and must do your Due Diligence

Risks... (Due Diligence and Accountability)

- **Data Security**
- **Data Backup and Recovery**
- **Data Disposal**
- **Data Discovery** (eDiscovery)
- **Data Backup and Recovery**



- **Location of the data –** Geographic locations and applicable regulations
- **Multi-Tenancy –** Co-mingling data with other cloud customers
- **Data aggregation and inference** – Data aggregation and inference that could result in breaching the confidentiality of sensitive and confidential information
- **Compliance** – Lack of controls that meet Regulatory and Industry Requirements
  - HIPAA, PII (State Regulations), PCI DSS, etc…

What are healthcare organizations doing?

Cloud vendors are not yet fully trusted:

Many healthcare organizations trust the security controls in their own systems more than a cloud provider’s.

KLAS research revealed:

Two-thirds of the hospitals that were interested in the cloud, preferred “private clouds” that were dedicated to their data and applications.

HIMSS focus group of senior health IT executives:

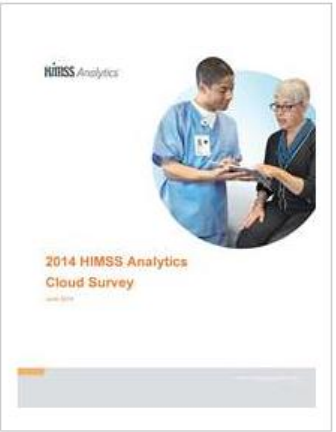
“…they were more comfortable using a private cloud than the public cloud and were more likely to store administrative data than clinical data in the cloud.”

Overall cloud trends

A HIMSS Analytics study published in mid-2014 showed healthcare providers’ cloud usage accelerating:

- Of the 150 survey respondents— most of them hospitals and health systems—83% were using the cloud in some way.
- Half of those organizations had clinical applications in the cloud, and 73% used cloud services for administrative or IT functions.
- Three quarters of respondents were using private or hybrid cloud services that gave them more control over their data than if they’d put everything in the public cloud.
- Just 23% said they were relying on the public cloud.

Source: **2014 HIMSS Analytics Cloud Survey**



HIMSS Analytics

2014 HIMSS Analytics
Cloud Survey

Reasons for not using the cloud

- ***Security (62%)***
- A continuing focus on in-house IT operations (42%)
- Availability and uptime concerns (39%)

However…

- 27% of healthcare cloud users went to the cloud partly because they thought it would improve security.

Source: **2014 HIMSS Analytics Cloud Survey**

Top reasons for adopting cloud

- Cost (56%)
- Speed of deployment (53%)
- Lack of internal staff/expertise (52%)
- Disaster recovery (50%)
- Need for a scalable, always-on solution (45%)
- Regulatory compliance (42%)
- Security (27%)
- Workforce mobility (27%)

Source: **2014 HIMSS Analytics Cloud Survey**

Move to the Cloud- Things to Do

- Identify the data to be moved to the cloud
- Identify risks- Impact to the organization if the data was modified, lost or accessed by an unauthorized individual
- Identify availability risks
- Identify applicable regulatory and compliance requirements, restrictions and regulatory concerns
- Identify a suitable deployment model to meet your needs
- Identify service providers that offer services in the deployment model
- Confirm the presence of a ***robust vendor management program*** within your organization
- Business Associate Agreements

Risk Assessment is Critical!

About Logicworks

20+ Years Keeping Critical Websites + Internet Applications Up & Running

HEALTHCARE

HIPAA compliance capable IaaS and Managed AWS

With our clients we host:

- 30 US States' Health Information Exchanges (HIE)
- The largest Health Insurance Exchange (HIX) in the United States
- The industry's leading Clinical Software-as-a Service (SaaS) providers
- Global Healthcare Systems Integrators
- Healthcare Analytics Platforms

LEGAL

- Largest e-Discovery / Digital Courtroom Platform in the World
- 40,000 Law Firms and Every Court in Washington DC

FINANCE

- SaaS Infrastructure for Top 5 Global Banks
- Investment/Portfolio, 401k, Mortgage Management

- 24x7x365 Monitoring
- Support & Escalation to Expert Engineers
- 100% SLA with High Availability Services
- Managed Security Services
- Database Services
- Custom Runbooks
- DR/Backup & Recovery
- Dev-Ops/Automation
- Dedicated Named Account Manager

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Trends in Cloud Adoption

In practice we're seeing:

- Private cloud service adoption by CEs
- Private and Public cloud service adoption by Service Providers to the Healthcare Industry

Driving factors include:

- Space constraints of in-house datacenters
- Agility
- Increased Focus on Core Competencies
- Security Management
- Consultation
- High-Availability architectures and SLAs

PRIVATE CLOUD SOLUTIONS

MANAGED AMAZON WEB SERVICES

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Shared Security Responsibility

Security in the cloud, whether private or public is a shared responsibility

The burden of responsibility can be weighted towards the provider or customer depending on the service model:

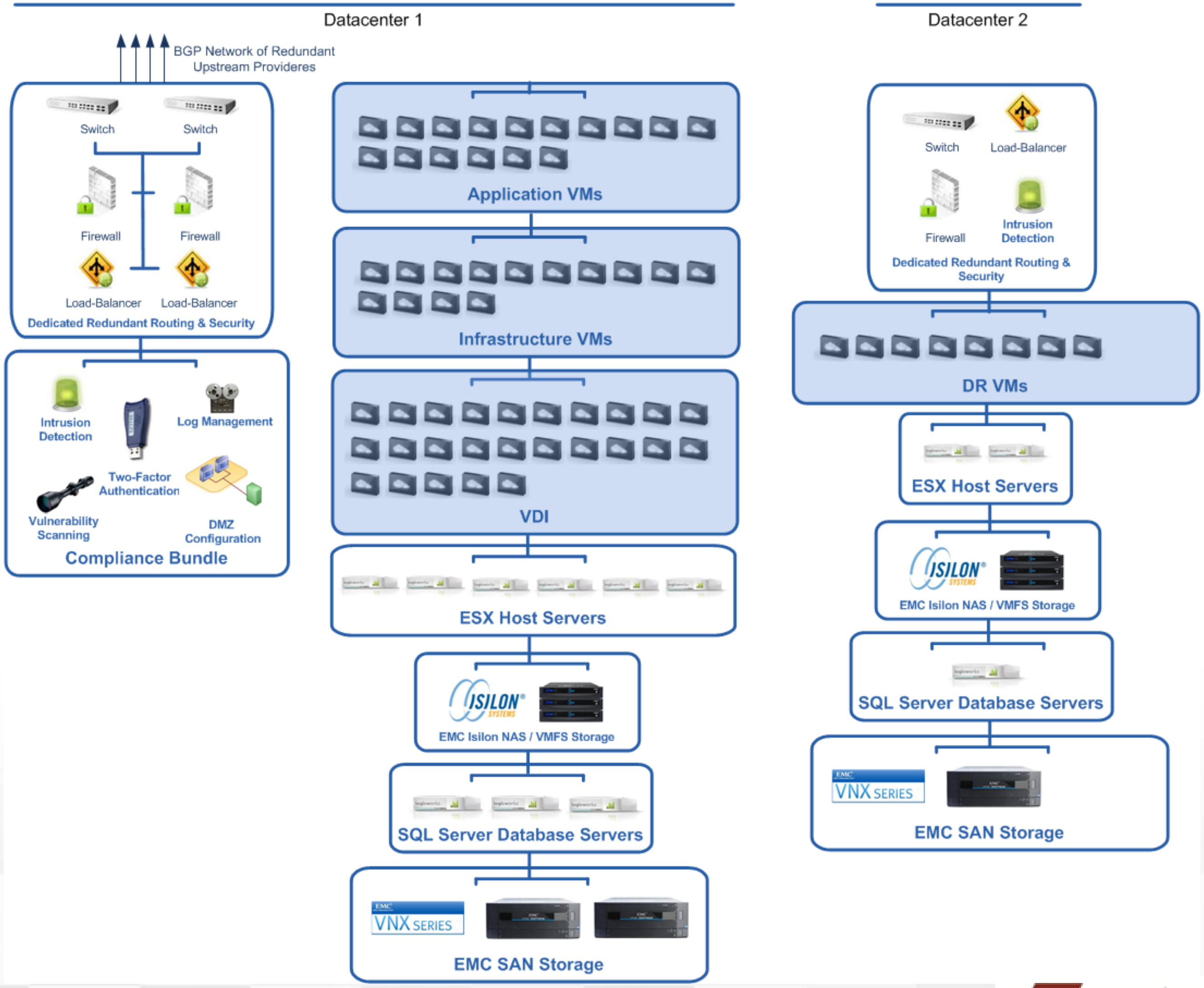
Self-service

Managed Service

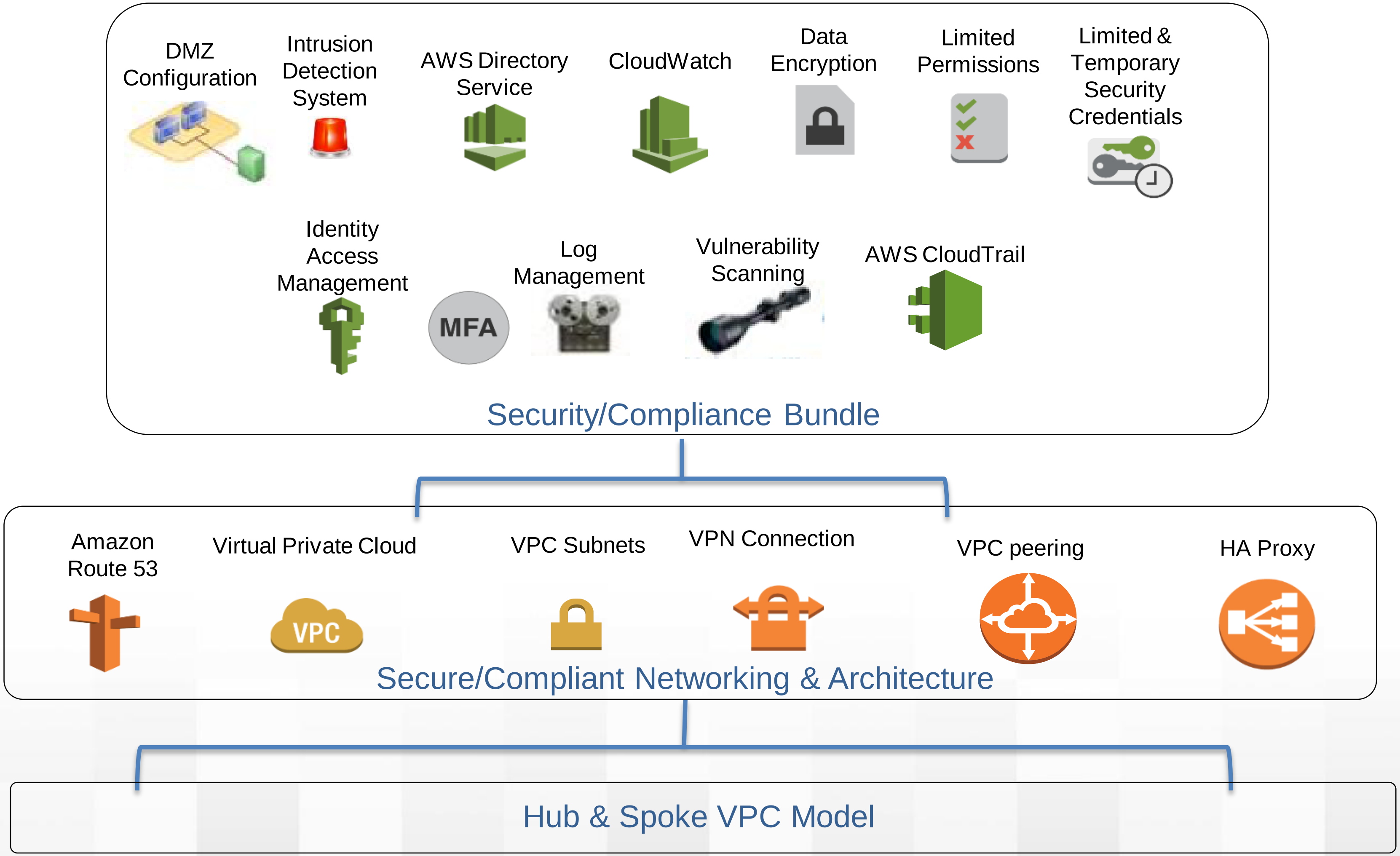
Have a common understanding of –

- Data Criticality
- The services
- Each Party's Responsibilities

Private Cloud Model



Public Cloud Model – Secure Architecture



DMZ Configuration

Intrusion Detection System

AWS Directory Service

CloudWatch

Data Encryption

Limited Permissions

Limited & Temporary Security Credentials

Identity Access Management

Log Management

Vulnerability Scanning

AWS CloudTrail

Security/Compliance Bundle

Amazon Route 53

Virtual Private Cloud

VPC Subnets

VPN Connection

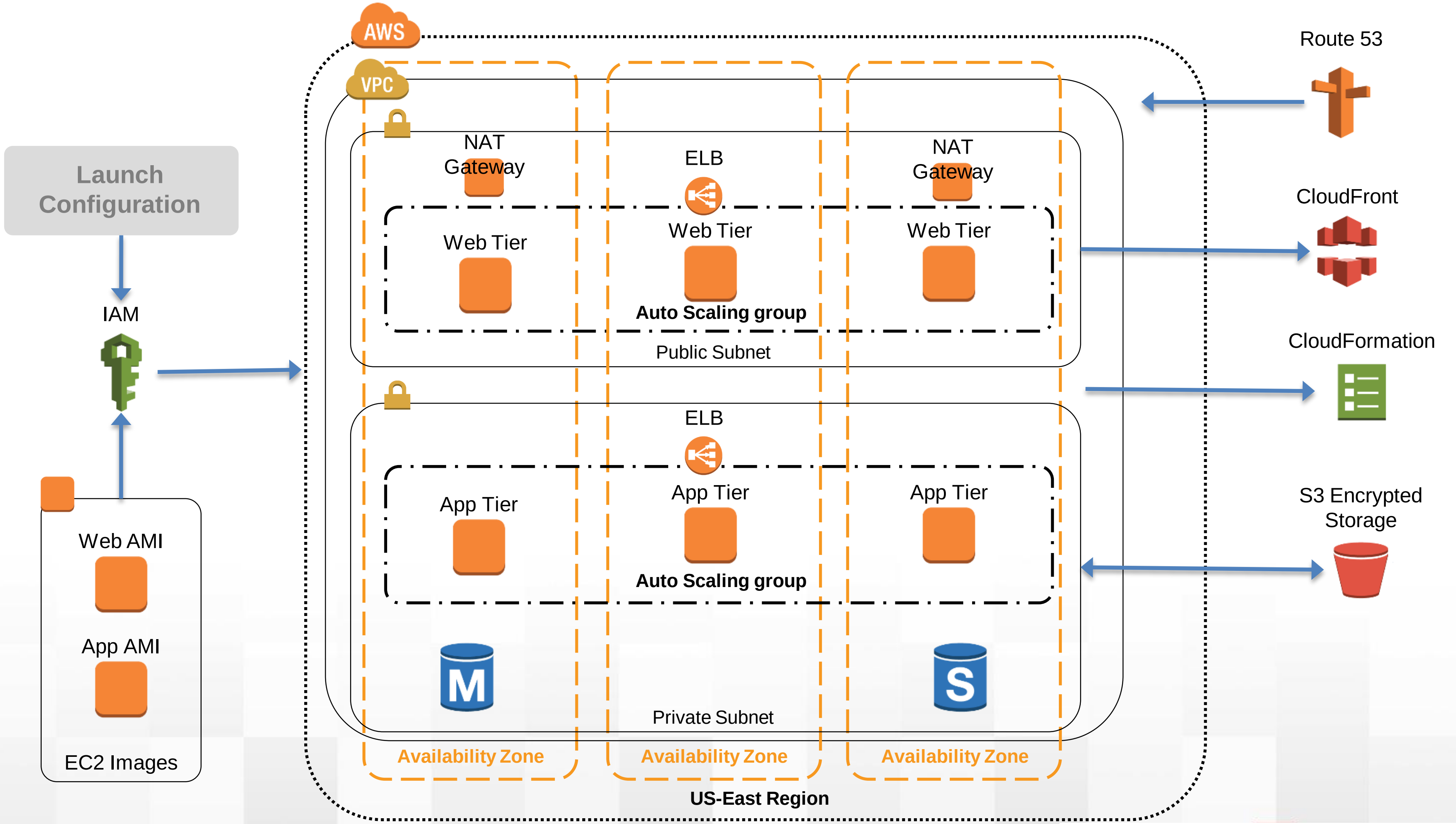
VPC peering

HA Proxy

Secure/Compliant Networking & Architecture

Hub & Spoke VPC Model

Public Cloud Model – Application Diagram



Understanding your Cloud Provider

Business Associate Agreements

- What limitations have been imposed?

Responsibilities Matrix

- Understand what each party is responsible for
- Review the OCR Audit Protocol with your provider

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