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Forging IT Security Experts

The CyberSecurity Experts

Who We Are

- SecureNinja – CyberSecurity Experts
- Founded in 2003 (13+ years of business)
- Currently offers over 120+ courses
- Leader in Cyber Security training
- Award Winning Training Programs
- Cyber Security Professional Services
- Expert Advisory of Security Related Issues

Past Performance

- US Department of Defense
- United States Air Force
- United States Army
- The Pentagon (OSD)
- US Department of Naval Intelligence
- US Dept of Treasury
- SAIC
- SRA
- CACI
- America Online
- MCI /WorldCom
- General Dynamics
- Lockheed Martin
- Northrop Grumman
- Raytheon Corporation
- Computer Science Corporation (CSC)
- Telos / Xacta
- Electronic On-Ramp (EOR)
- International Relief & Development
- Kingdom of Saudi Arabia
- Embassy of Indonesia
- Verizon
- The Centech Group
- Gupton & Associates
- Harris Corporation
- Definiens Corporation
- Versatone
- Worldwide Information Network Systems (WINS)
- Quantico
- McGuire AFB
- Bit Defender
- Synergetics
- Booz Allen Hamilton

Cloud Benefits WITH Risk Management

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Cloud Computing

- What is it?
- Cloud Essential Characteristics
- Deployment Models
- Service Models
- Service Model Comparison
- Deployment Models
- Security & Guaranteed SLA

What is Cloud computing?

- NIST SP 800-145 defines it as:
- Cloud computing is a model for enabling ubiquitous, convenient, **on-demand** network **access to a shared pool of configurable computing resources** (e.g., networks, servers, storage, applications, and services) that **can be rapidly provisioned and released** with minimal management effort or service provider interaction. This cloud model **promotes availability** and is composed of **five essential characteristics, three service models**, and **four deployment models**.

NIST Cloud Definition

Deployment Models

Hybrid Clouds

Private Cloud
Community Cloud
Public Cloud

Service Models

Infrastructure as a Service (IaaS)
Platform as a Service (PaaS)
Software as a Service (SaaS)

Essential Characteristics

On Demand Self-Service
Broad Network Access
Rapid Elasticity
Resource Pooling
Measured Service

Common Characteristics

Massive Scale
Resilient Computing
Homogeneity
Geographic Distribution
Virtualization
Service Orientation
Low Cost Software
Advanced Security

Essential Characteristics (1 of 3)

- On-demand self-service
  - Can provision computing capabilities as needed automatically without needing interaction with the service provider.
- Broad network access
  - Capabilities available over the network
  - accessed through standard mechanisms that promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs).
- Resource pooling
  - The provider's computing resources are pooled to serve multiple consumers using a multi-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to consumer demand.

Essential Characteristics (2 of 3)

- Resource Pooling
  - Location Independence
  - Customer has no control of exact location of resources
  - May be able to specify location at a higher level of abstraction
    - Country, State, or Datacenter
  - Resources could be storage, processing, memory, network bandwidth, and Virtual Machines.
- Rapid elasticity
  - Capabilities can be rapidly and elastically provisioned
  - In some cases automatically, to quickly scale out or in
  - Appears to be unlimited to the customer
  - Can be purchased in any quantity at any time

Essential Characteristics (3 of 3)

- Measured Service
  - Automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service (e.g., storage, processing, bandwidth, and active user accounts).
  - Metering is usually done through a pay-per-use business model
  - Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service.

SaaS Service Model

- *Cloud Software as a Service (SaaS).*
  - Uses provider's application's running in the cloud
  - Accessible through a thin client interface such as a browser
    - i:e web based email services
  - Customer does not manage the cloud infrastructure
    - Such as networks, servers, OS's, storage, bandwidth
  - May control user-specific application setting

Examples: Google Docs, Adobe Cloud, Office 365, Email, Salesforce.com

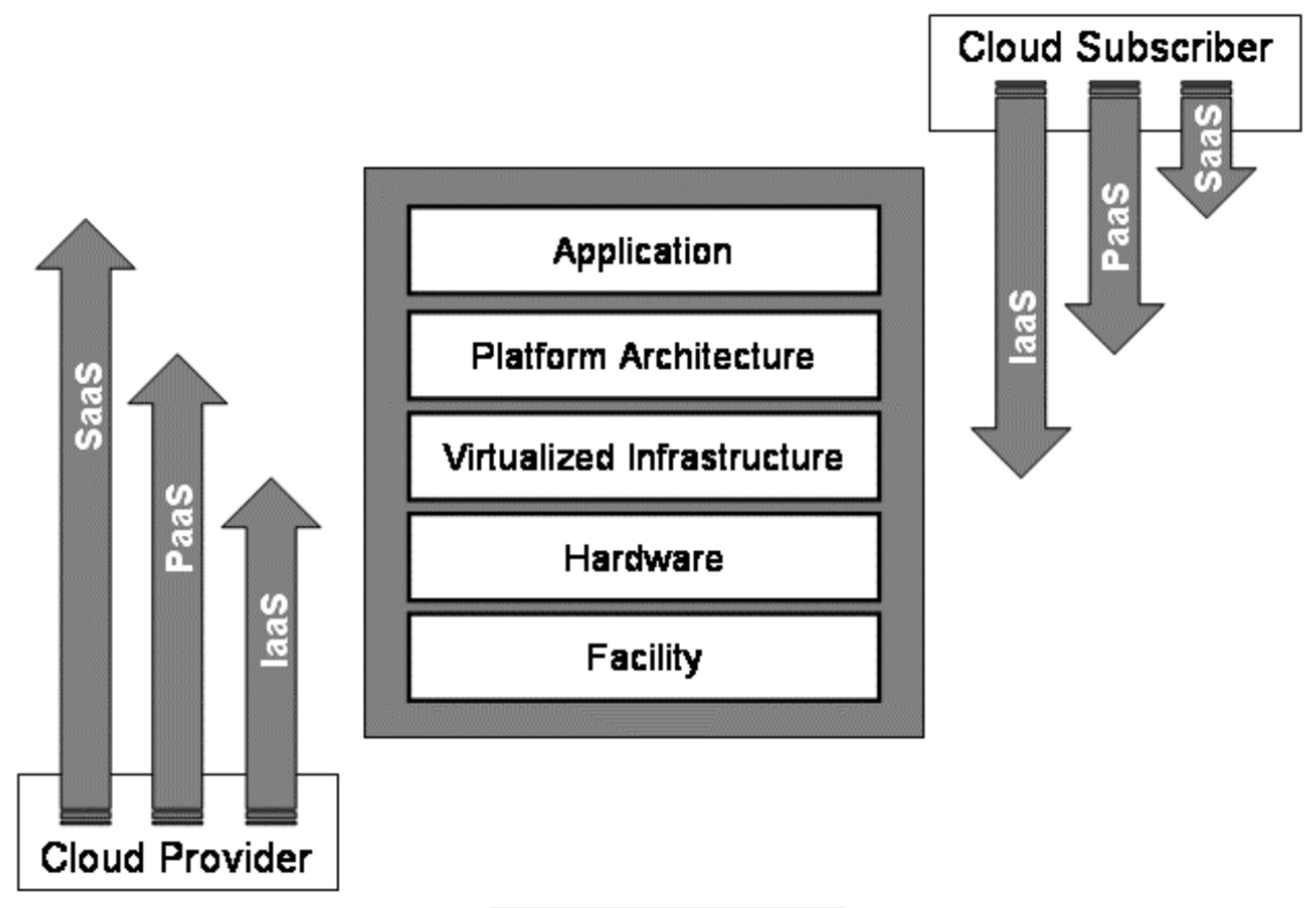
PaaS Service Model

- *Cloud Platform as a Service (PaaS)*
  - Customer can deploy onto the cloud infrastructure
  - Customer deploys own applications or COTS applications
  - Only compatible apps can be deployed
  - Customer does not control underlying cloud architecture
  - Customer has control on application deployed
  - Customer can control hosting environment configuration
  - Examples: Azure Service Platform, Force.com, Google App Engine

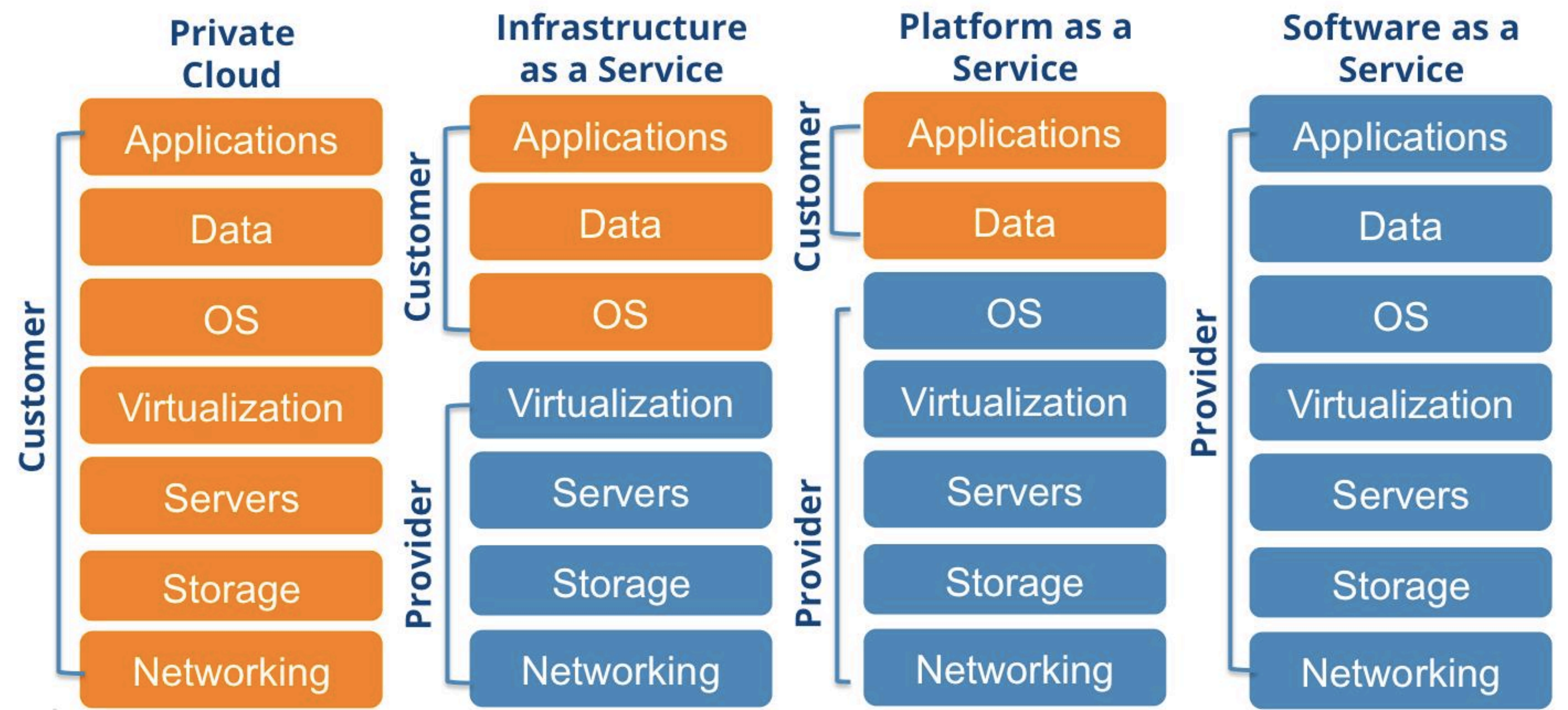
IaaS Service Model

- Cloud Infrastructure as a Service (IaaS)
  - Similar to a dedicated server
  - Customer can install an OS of its choice
  - Customer can install applications of his choice
  - Customer can provision resources as needed
    - Processing, Storage, Networks, Software, Applications
  - Customer does not control underlying cloud infrastructure
  - May have limited control on network component
    - i:e installing host firewall
  - Examples: Amazon Web Services, GoGrid, 3Tera

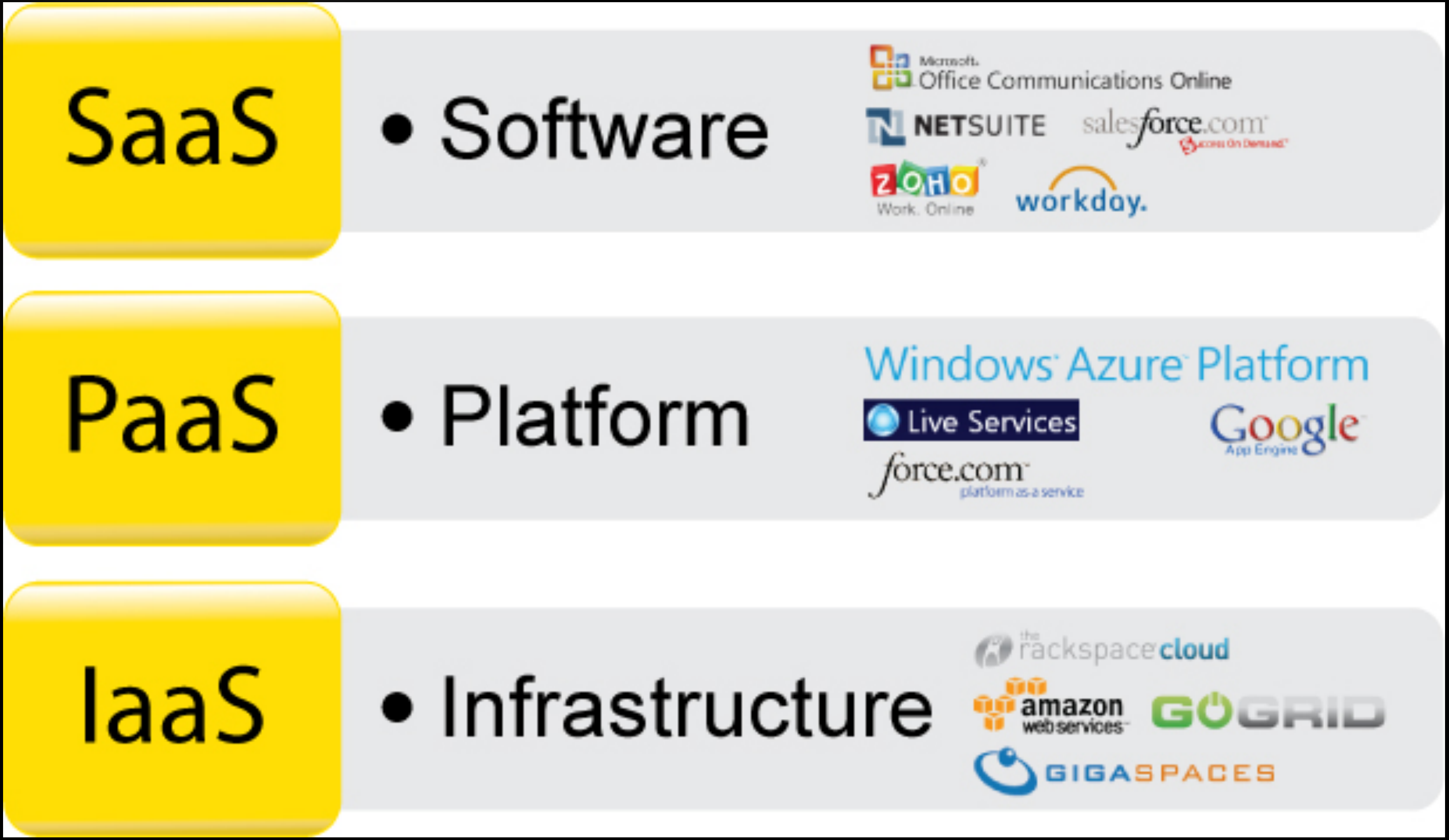
Service Models Comparison



Service Model Comparison (2)



Service Model Comparison (3)



SaaS
- Software

PaaS
- Platform

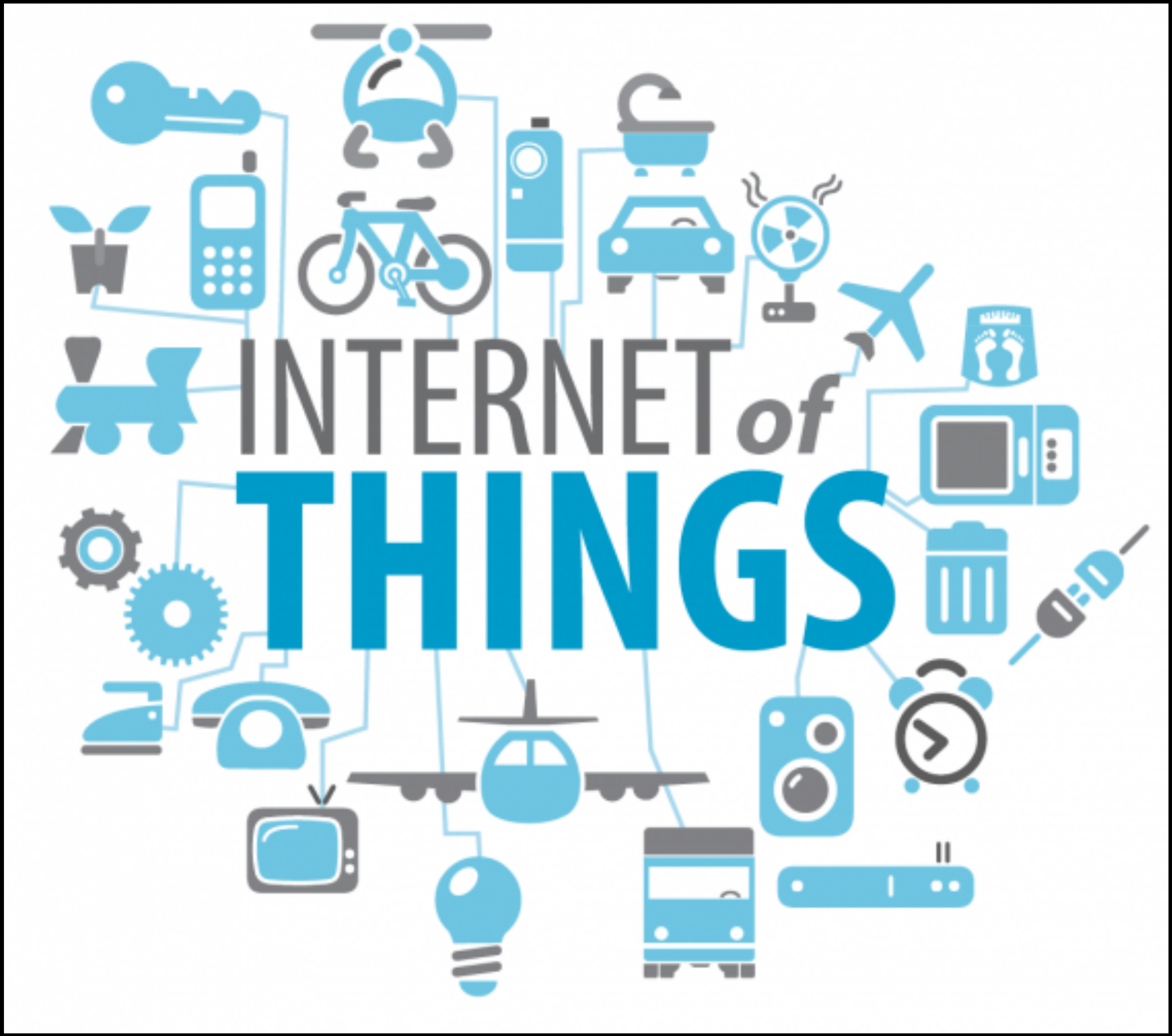
IaaS
- Infrastructure

Deployment Models (1 of 2)

- Private Cloud
  - For one company only
  - May be manage by company or a third party
- Community Cloud
  - Shared by multiple companies
  - Usually companies with shared concerns
    - Mission, Security, Policy, and Compliance considerations
  - May be manage by company or a third party
  - May be on premise or off premise

Deployment Models (2 of 2)

- Public Cloud
  - Cloud is made available to general public
  - Cloud is available to large industry group
  - Cloud is owned by the organization selling cloud services
  - Amazon EC2 would be an example of this
- Hybrid Cloud
  - Composed of two or more clouds
  - Could be a mix of private, community, or public clouds
  - Each of the cloud are unique entities
  - Are bounded together using standardized or proprietary technologies
  - Enables data and application portability
    - i:e Load balancing between clouds


INTERNET of
THINGS

Cloud Security (1 of 2)

- Attractive Cloud Features can also be at odds with traditional security models and controls
- Security and Privacy must be considered through SDLC
- Doing security after the fact is expensive
- Securing the client is also needed
  - Mobile devices, Smart Phones, PDA, Tablets, etc…
  - Have a plan in case of a device lost or theft
  - Physical Security is a must for IOT devices
- Beware of browser add-on and plugins

Cloud Security (2 of 2)

- Educate users on the use of Social Media Applications
- Accessing Webmail or Cloud Services from public Hotspots or “Free” Internet networks
- Social Engineering is a true threat to security
- Assess the Security within your cloud
- You still need to use multilevel security
- Treat it as untrusted traffic from the Internet

Cloud Computing SLA

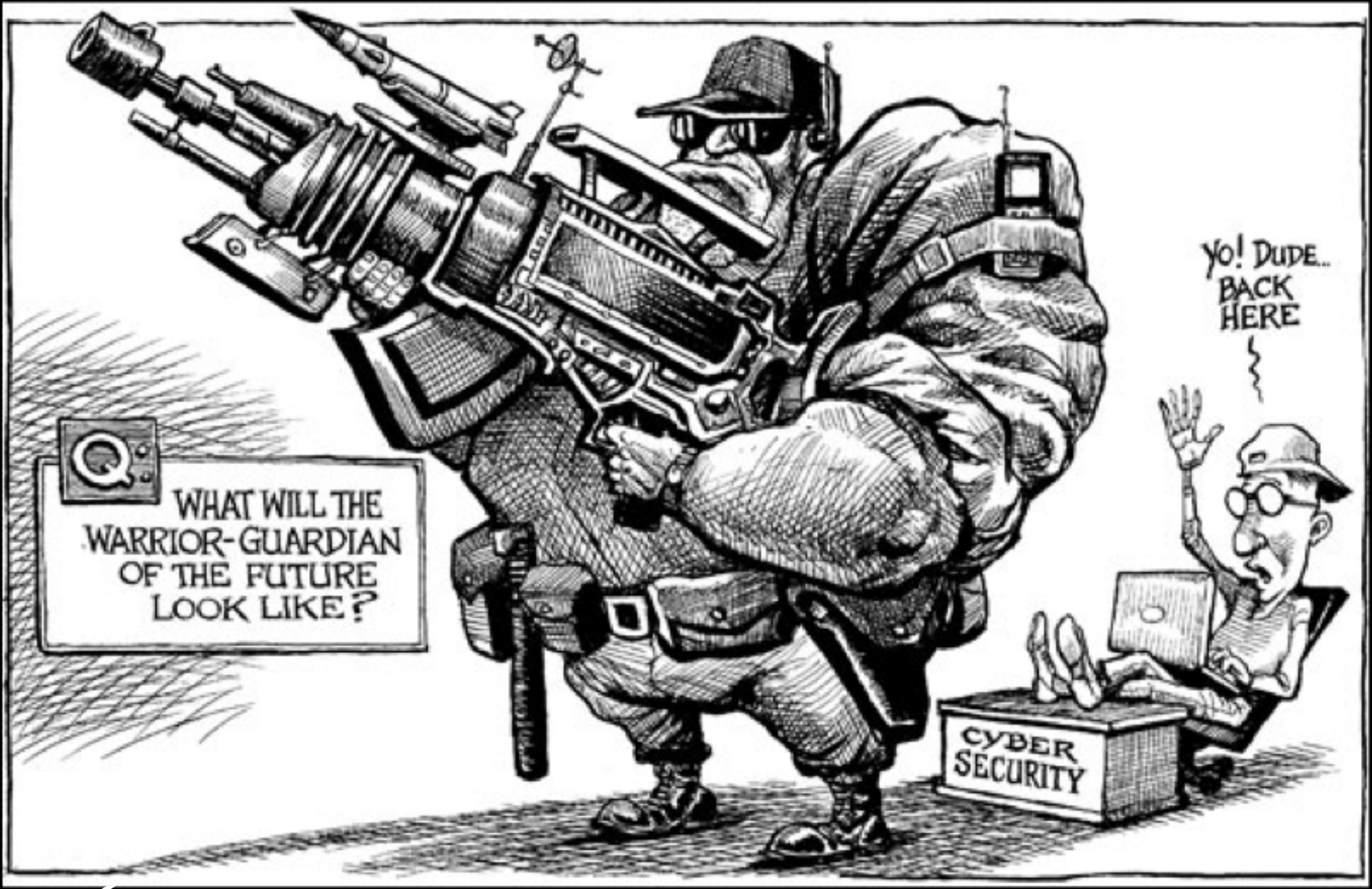
- Non-Negotiable SLA are usually the norm
  - All terms prescribed by Service Provider
  - Can be changed at any time without warning
- Ensure they meet your requirements
- Make use of a negotiated SLA
  - The agreement will list YOUR requirements
  - Ensure it cannot be modified without you knowing
  - Make the provider accountable

Cloud Computing Advantages

- Qualified Staff
- Platform Strength
- Availability of resources
- Backup and Recovery
- Mobile Endpoints (IOT Support)
- Data concentration
- Data Center and Cloud Oriented

Cloud Computing Disadvantages

- System Complexity
- Shared Multi-Tenant environment
- Internet facing services
  - Delivery is done over the web
- Loss of control
  - Control transferred to Service Provider
  - Lost of control over physical and logical aspects
  - Security and Privacy could be a challenge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WHAT WILL THE WARRIOR-GUARDIAN OF THE FUTURE LOOK LIKE?
YO! DUDE.. BACK HERE
CYBER SECURITY

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