

# Cloud Security Survey

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# Cloudy Cloud is Cloudy

What is the cloud?

On Demand Service

Network access

Resource pooling

Elasticity of Resources

Measured Service

# Cloud Types/Variants

IaaS - Infrastructure as a Service  
rackspace, AWS, Google Drive

PaaS - Platform as a Service  
heroku, Google App Engine

SaaS - Software as a Service  
github, Google Drive, salesforce.com

# Private vs. Public

Internal Cloud

Public Cloud

Hybrid Cloud

combination. Private cloud with overflow going to public cloud.

# Cloud Software Basics

Immense Hypervisor based Clusters

Heterogeneous OSes virtualized

Abstract slice

# Security Concerns

Virtual Machine Separation

PaaS app separation

# Service Hijacking

Secure API's for cloud access?

SOAP, REST vulnerabilities

XML Sig wrapping

Exploiting performance measures

# Obscurity (Good)

Physical Location of Resources  
geographic locations

Virtualization  
harder to make sense of everything



# Obscurity (bad)

"Just trust us" - trade secrets, physical resource management, virtual resource management, human resource management

Who else is on my share?  
collateral damage

# Business Issues

Cost-overrun attacks - availability never threatened, but may cost \$\$\$.

Deceptive Billing - trusting black box

Captivity - can you switch? what are costs?

Bankruptcy - if cloud provider goes bankrupt

# Legal Issues

Indirect Impact from Other Cloud Users

Government Access

Hazards from Cloud Localities

# Potential Fixes

Better hypervisors - smaller, verifiable

3rd Party Auditors - verify usage, performance

SECaaS - Cloud hosted security measures

Certifications - measurements for cloud security.

# Cloud Questions

If you have \$0 security budget, could cloud be a security improvement?

Who owns the data of the cloud?

Where should encryption go?