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?