Cloud Technologies and Security

Chapter 18

SYBEX

Cloud Computing Service Models

- **Software as a Service (SaaS)**
  - Examples: Office 365 or Gmail
  - Eliminates the need to install and maintain applications on individual computers
- **Platform as a Service (PaaS)**
  - Software developers use PaaS as a framework on which to build applications OSs, servers, storage, managed by someone else
- **Infrastructure as a Service (IaaS)**
  - Self-service model with access to configure and use all levels of infrastructure down to the server

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Types of Cloud Solutions

- **Public Cloud**
  - External, hosted by a third party
  - Security issue: control by a third party may be an unacceptable risk
- **Private Cloud**
  - Built by an individual company for their use only
  - Retains control of security and data
- **Hybrid**
  - Combines public and private
  - May store sensitive data on private cloud while using size and scale of public cloud for less sensitive data
- **Community Cloud**
  - Shared by several organizations with common needs and security goals

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Security Threats in the Cloud

- Large data breaches more common
- Data loss (data might not just be copied and stolen but inadvertently deleted)
- Accounts and services may be hijacked and credentials intercepted
- Cloud APIs may be insecure
- DoS also affects cloud

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More Security Threats in the Cloud

- **Malicious insiders or poor security practices at the cloud service**
- **Use of cloud services by attackers to scale their attacks**
- **Multitenancy**
  - Various clients reside on the same machine.
  - A flaw in implementation could compromise security.
- **Laws and Regulations**
  - The consumer retains the ultimate responsibility for compliance.

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Cloud Computing Attacks

- **Session Riding (aka Cross-Site Request Forgery)**
  - Tricks a user into running request that runs with their privileges and context
- **Side Channel Attacks**
  - Potentially devastating but requires skill and luck by the attacker
- **Signature Wrapping Attacks**
  - Relies on altering web service SOAP and XML content but preserving the ID

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Controls for Cloud Security

- Secure design and architecture are key
- Identity and access management as important or more important in the cloud
- Governance (ensures that the policies, procedures, and standards are deployed and enforced)
- Risk management and compliance
- Consider availability and uptime QoS/SLA of your cloud provider

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Testing Security in the Cloud

- SOASTA CloudTest
- LoadStorm
- BlazeMeter
- Nexpose
- AppThwack
- Jenkins Dev@Cloud
- Xamarin Test Cloud

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