Cloud Security: Challenges, Vulnerabilities & Solutions

Class Presentation by
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Cloud Computing

- On-demand services over the internet
- Large amount of virtual storage
- No setup cost of infrastructure
- Service cost is very less
- Completely changed distributed computing
- Increased flexibility and scalability
- Backup and restore data

Cloud Computing Architecture

- Service Models
  - Software as a Service (SaaS)
  - Infrastructure as a Service (IaaS)
  - Platform as a Service (PaaS)
- Deployment Models
  - Private Cloud
  - Public Cloud
  - Community Cloud
- Storage Models
  - Shared File/Block Storage System
  - Object Storage System
  - Database/Table Storage System

Cloud Security

- Cloud Security Concepts
  - Virtualization Aspect
  - Multi-Tenancy
  - Data Outsourcing
- Requirements of Cloud Security
- Threats to Cloud Computing
  - Data loss and leakage
  - Insecure interface and API
  - Identity Theft, etc.
- Attacks on Cloud Security
  - Denial of Service Attack
  - Service Injection Attack
  - Man-in-the-middle Attack
  - Phishing attack, etc.

Cloud Security Issues and Solutions

- Data Storage and Computing Security Issues
  - Data Storage
  - Un-trusted Computing
  - Cryptography
- Virtualization Security Issues
  - Issues in Virtual Machine
  - Virtual Machine Monitor
  - Malware
- Internet and Services Related Security Issues
- Network Security Issues
- Access Control Issues
  - Physical Access
  - User Credentials
  - Authorization
- Discussion and Open Issues

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