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A Live Simulation of Cloud Misconfiguration Attacks

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Agenda

1. Overview of cloud misconfiguration risk
2. Live Demo: Cloud misconfiguration exploits in action
3. Actionable steps to secure your customers' cloud environments
4. Q&A

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Cloud misconfiguration is a major security risk

CONCERNED THEY'VE BEEN HACKED AND DON'T KNOW IT	CONCERNED THEY'RE VULNERABLE TO A CLOUD BREACH	MISCONFIGURATION RISK WILL INCREASE OR STAY THE SAME THIS YEAR
84%	92%	76%

"I'm seeing a lot of cloud configuration errors in the real world—and it's scaring the hell out of me."

– David Linthicum, InfoWorld

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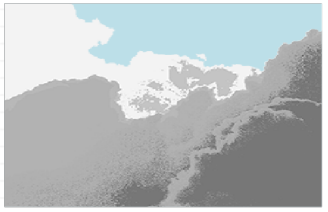
Cloud misconfiguration is a major security risk

66%
IAM

59%
SECURITY GROUP RULES

51%
OBJECT STORAGE ACCESS POLICIES

42%
ENCRYPTION IN TRANSIT DISABLED



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Cloud misconfiguration is often overlooked

Many dangerous cloud misconfigurations are:

- not recognized as misconfigurations by security teams
- not considered policy violations by compliance frameworks
- exceedingly common in enterprise cloud environments

"Nearly all successful attacks on cloud services are the result of customer misconfiguration, mismanagement and mistakes."

– Neil MacDonald, Gartner

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How exploit strategy has evolved in the cloud era

Before Cloud

1. Identify your targets
2. Search for vulnerabilities

Cloud

1. Identify vulnerabilities
2. Prioritize your targets

Skilled or well-funded hacker groups are employing automation to discover and exploit misconfigured cloud assets within hours of their deployment."

– John Breeden II, CSO Online

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Security strategy must evolve too

Before Cloud

1. Network and security teams deliver infrastructure to app teams
2. Network analysis and threat detection tools identify intrusions; human-guided response

Cloud

1. Developers create their own infrastructure and are empowered to secure it
2. Policy as code validation tools prevent misconfiguration; automated detection and remediation eliminates it

Cloud security is a software engineering problem, not a security analysis problem.

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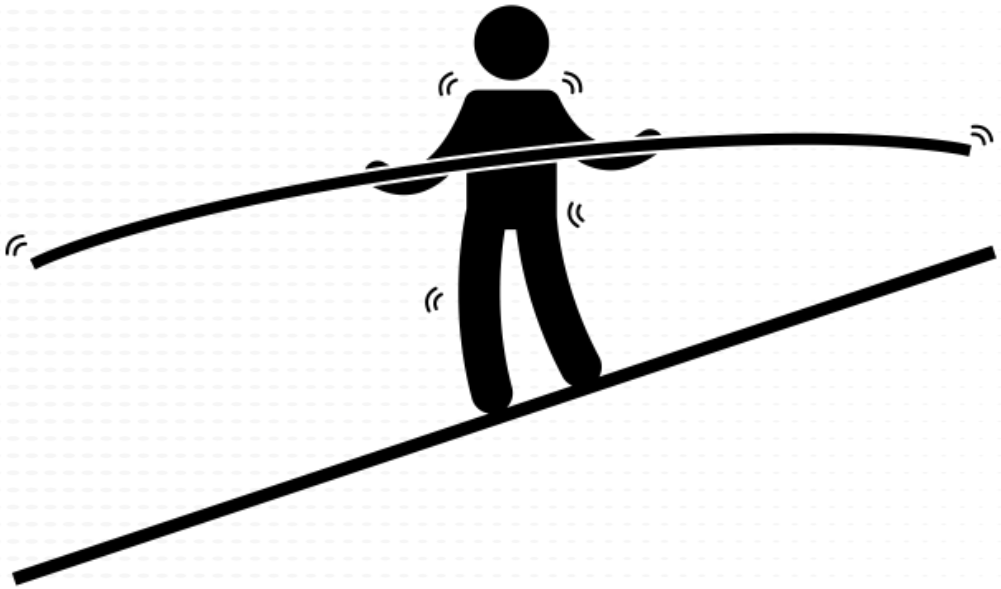
A demonstration of a cloud misconfiguration attack



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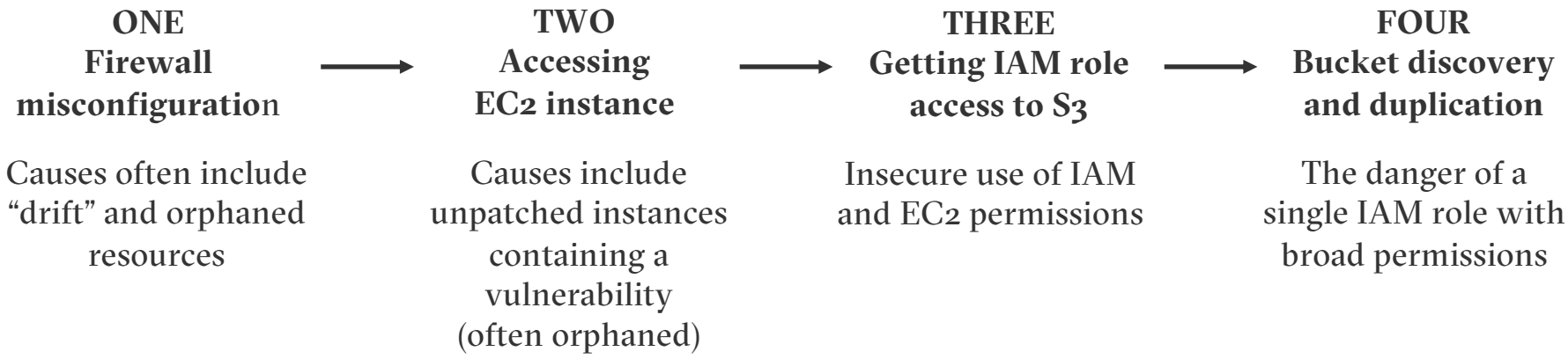
This misconfiguration attack in review



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Key takeaways and recommendations

1: Monitor all access point configurations

- Continuously monitor Security Groups for misconfiguration (e.g. access from 0.0.0.0/0)

2: Apply Principle of Least Permission

- Ruthlessly limit IAM roles to business requirements for the app
- Use different end points for read and write operations
- Eliminate S3 bucket listing in production environments

3: Don't allow EC2 instances to have IAM roles that allow attaching or replacing role policies

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Key takeaways and recommendations

4. Ruthlessly clean up unused cloud resources (especially EC2 instances and S3 buckets)

- "Orphaned" resources are common and can contain misconfigurations and unpatched OS or application vulnerabilities

5. Include cloud misconfiguration in penetration testing

- Use outside pen testers who understand cloud misconfiguration and how to exploit it.

6. Use automated remediation for security-critical cloud resources

- Focus first on VPCs, S3 buckets, Security Groups, EC2, and IAM)

7. Use an open source policy as code framework for validating compliance

- Open Policy Agent and Rego policy language

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Questions?

Q&A

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