

Breaking Boundaries: Multi-Cloud Red Teaming Through Misconfigurations

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Cloud Red Teaming Agenda

- Cloud 101
- Red Teaming 101
- IAM Concepts
- Cloud-Red-Labs Overview and Lab Safety.
- Azure Attack Flow and Practical Demonstrations
- AWS Attack Flow and Hands-On Demonstrations
- Detection and Mitigation Strategies
- Q&A Preparation

aws sts get-caller-identity

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Cloud 101

Cloud 101



Cloud 101



Cloud 101

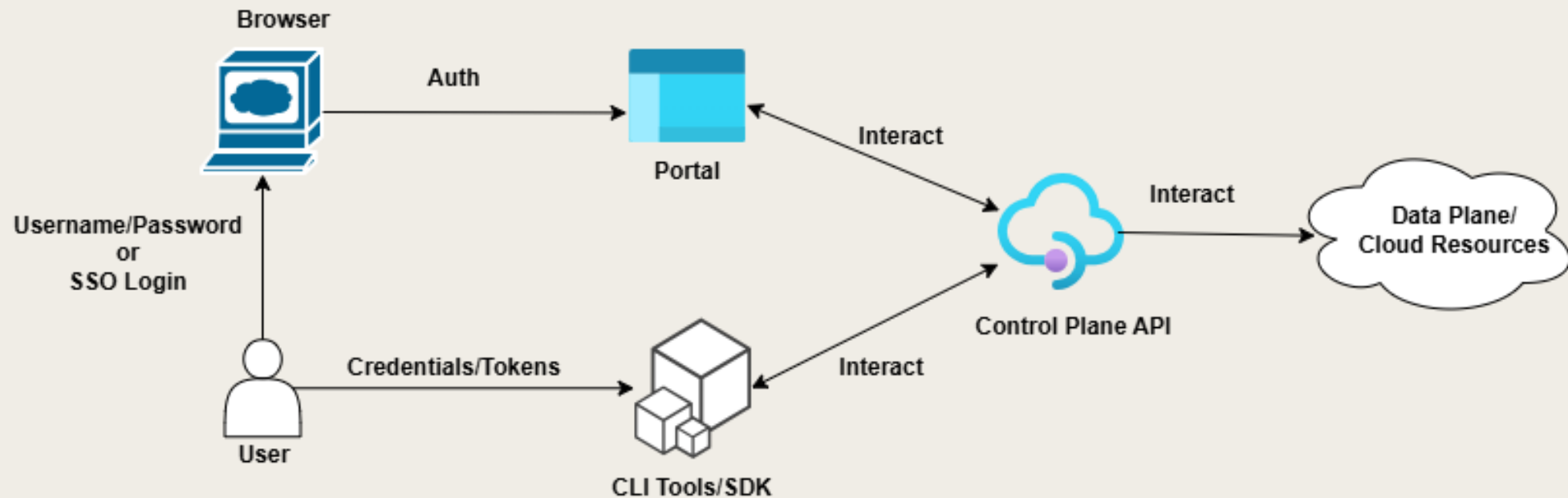


Cloud 101

Layer	Infrastructure as a Service (IaaS)	Platform as a Service (PaaS)	Software as a Service (SaaS)
Data	Customer responsibility	Customer responsibility	Customer responsibility
Application	Customer responsibility	Customer responsibility	Cloud provider responsibility
Operating system	Customer responsibility	Cloud provider responsibility	Cloud provider responsibility
Virtualization	Cloud provider responsibility	Cloud provider responsibility	Cloud provider responsibility
Servers	Cloud provider responsibility	Cloud provider responsibility	Cloud provider responsibility
Storage	Cloud provider responsibility	Cloud provider responsibility	Cloud provider responsibility
Network	Cloud provider responsibility	Cloud provider responsibility	Cloud provider responsibility
Physical	Cloud provider responsibility	Cloud provider responsibility	Cloud provider responsibility

Cloud 101

- **Control Plane** - Control planes provide the administrative APIs used to create, read/describe, update, delete, and list (CRUDL) resources.
- **Data Plane** – Data plane consists of the systems for consuming those resources, which is basically primary function of the service.



Red Teaming 101



Red Teaming 101

Red Team Operations Attack Lifecycle



IAM Concepts

Identity and Access Management

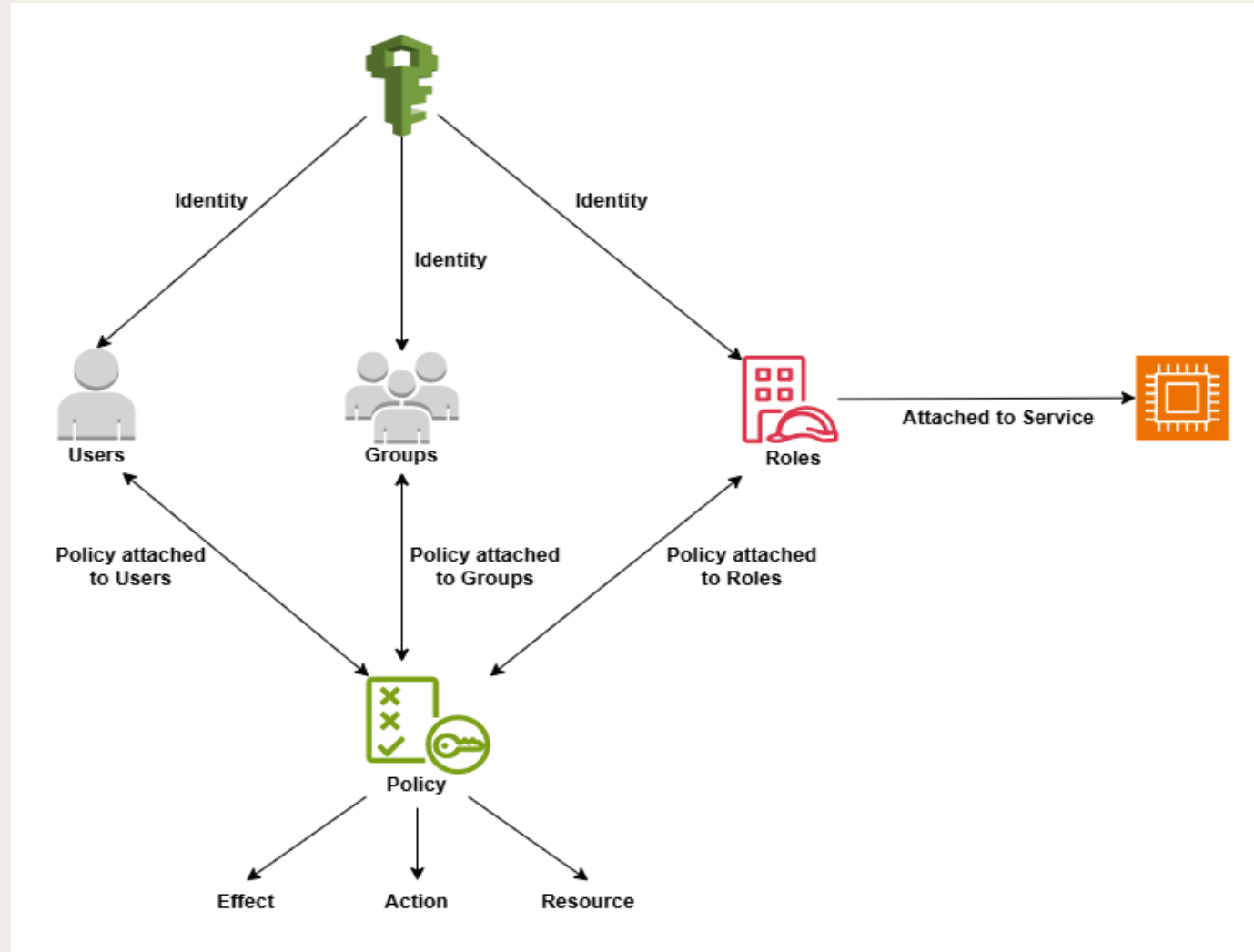
Identity and Access Management (IAM) is the control plane that defines **who** can perform **what** actions on **which resources(where)**, under **what conditions**, and for **how long** using policies evaluated by the providers control plane.

Everything in cloud IAM is “*Who → What → Where → When → How*”

Identity and Access Management (IAM)

- Identity/Principal (Who)
- Authenticate
- Authorization (Policy) (What)
- Resource (Where)
- Condition (When)

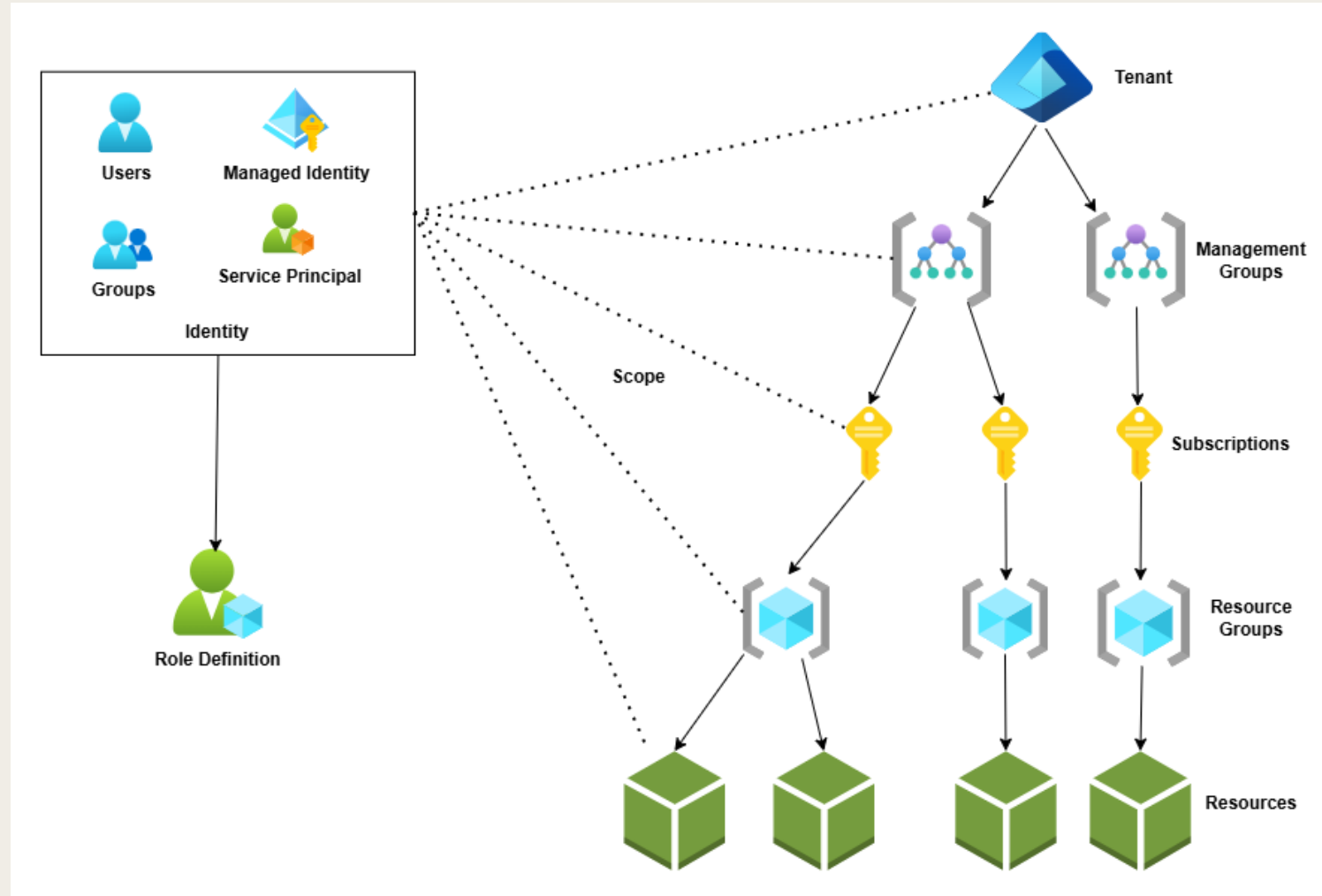
AWS



AWS

```
monk@MSI:~$  
monk@MSI:~$ aws iam get-policy-version --policy-arn arn:aws:iam::856191759585:policy/  
{  
  "PolicyVersion": {  
    "Document": {  
      "Statement": [  
        {  
          "Action": "s3:ListBucket",  
          "Effect": "Allow",  
          "Resource": "arn:aws:s3:::cloud-red-lab-internal-752b58"  
        },  
        {  
          "Action": "s3:GetObject",  
          "Effect": "Allow",  
          "Resource": "arn:aws:s3:::cloud-red-lab-internal-752b58/*"  
        }  
      ],  
      "Version": "2012-10-17"  
    },  
    "VersionId": "v1",  
    "IsDefaultVersion": true,  
    "CreateDate": "2025-10-30T15:29:32Z"  
  }  
}  
monk@MSI:~$
```

Azure



Permissions are
inherited from top
to bottom



Azure

JSON

 Copy

```
{
  "Name": "Virtual Machine Operator",
  "Id": "88888888-8888-8888-8888-888888888888",
  "IsCustom": true,
  "Description": "Can monitor and restart virtual machines.",
  "Actions": [
    "Microsoft.Storage/*/read",
    "Microsoft.Network/*/read",
    "Microsoft.Compute/*/read",
    "Microsoft.Compute/virtualMachines/start/action",
    "Microsoft.Compute/virtualMachines/restart/action",
    "Microsoft.Authorization/*/read",
    "Microsoft.ResourceHealth/availabilityStatuses/read",
    "Microsoft.Resources/subscriptions/resourceGroups/read",
    "Microsoft.Insights/alertRules/*",
    "Microsoft.Insights/diagnosticSettings/*",
    "Microsoft.Support/*"
  ],
  "NotActions": [],
  "DataActions": [],
  "NotDataActions": [],
  "AssignableScopes": [
    "/subscriptions/{subscriptionId}",
    "/subscriptions/{subscriptionId2}",
    "/providers/Microsoft.Management/managementGroups/{groupId}"
  ]
}
```



Common Misconfigurations in Multi-Cloud IAM Setups

Overly Permissive Roles

Roles with excessive permissions increase the risk of unauthorized access and potential data breaches.

Improper Trust Relationships

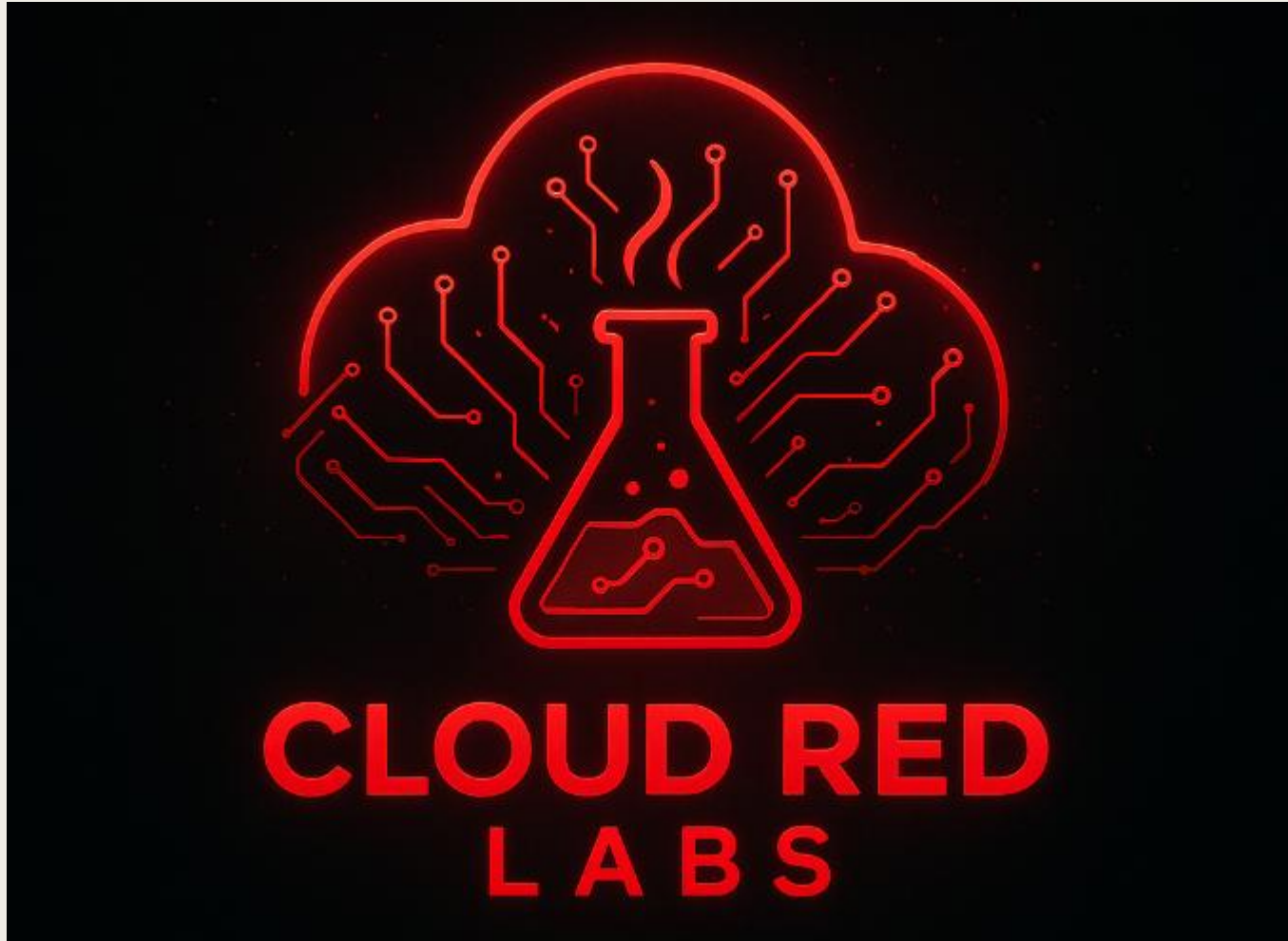
Incorrectly configured trust relationships can allow unintended entities to access sensitive cloud resources.

Inconsistent Policy Management

Discrepancies in policies across clouds create gaps that attackers can exploit for unauthorized access.

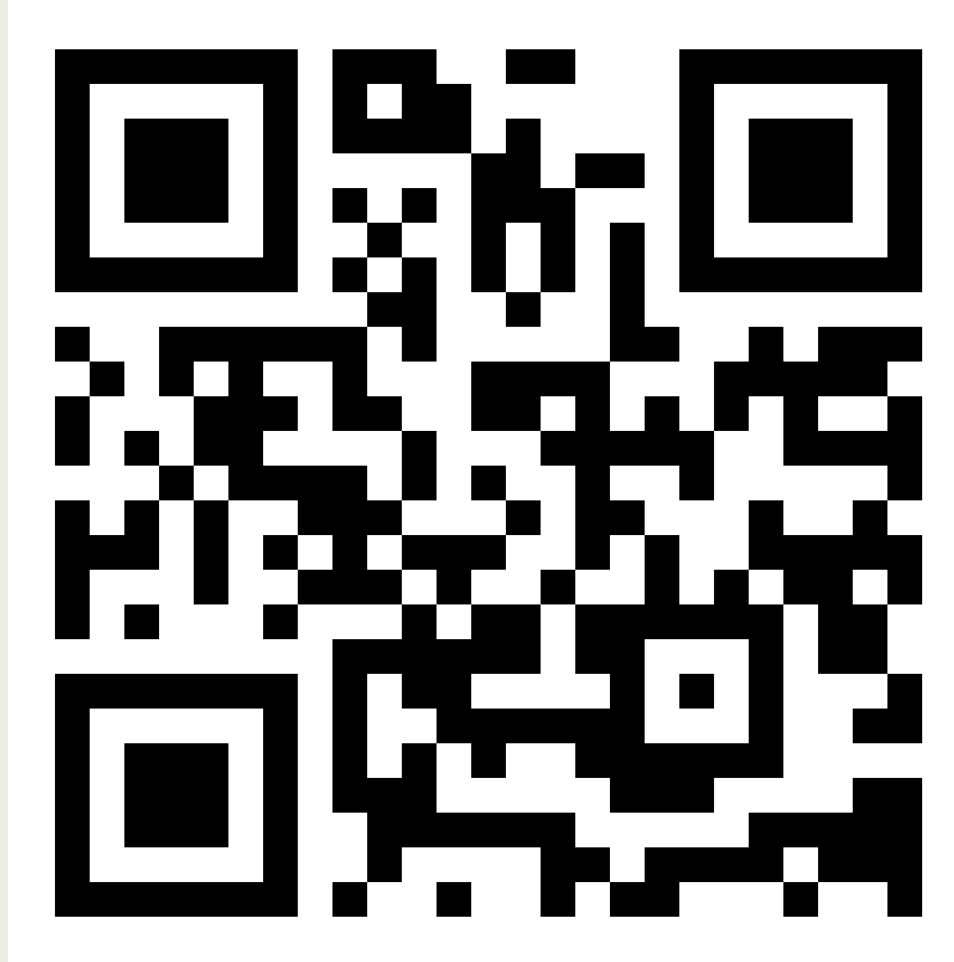
Cloud-Red-Labs

Cloud Red Labs



Reference Document

Please scan the below to access the application details or navigate to <https://shorturl.fm/rn36C>



Azure Attack Path

Initial Access

1. Phishing for Users in the Tenant.
2. Exposed secrets.
3. Remote Code Execution by exploitation of Public Facing Infrastructure.

N.B: In this case we will exploit SSTI on an application.

Internal Recon

1. Using the Managed Identity token, we can try to enumerate for resources under our given subscription.
2. Look around for common services like Compute, Secret Management and Storage services.

Lateral Movement

1. Using the SSTI, and the correct resource get the Key Vault token.
2. Using the Key Vault token try to fetch sensitive data from the Key Vault.

Data Exfiltration

1. Using the SAS URL recovered from the Key Vault try to enumerate for other sensitive files.
2. Using the files try to gain persistence backdoor to the environment.

Privilege Escalation

Q. What attack vectors are possible once we compromise the **bkpuser**.

AWS Attack Path

Initial Access

1. Phishing for Users in the Cloud.
2. Exposed secrets.
3. Remote Code Execution by exploitation of Lambda Function.

N.B: In this case we will exploit command execution on an application.

Initial Access

1. Difference between Short Term and Long-Term Credentials.

Internal Recon

1. Enumerate the Roles, Permissions and see what services we have access within the environment.

Privilege Escalation and Lateral Movement

1. Assume a role to read secrets from the s3 bucket.
2. Abused the Long-Term Secrets.

Privilege Escalation and Lateral Movement

1. Assume a role to read secrets from the s3 bucket. (Data Exfiltration)
2. Abused the Long-Term Secrets. (Persistence.)

Data Exfiltration

1. Try to extract secrets using the newly found credentials.

Final Task: Use what we have identified so far to find out the Final Flag.

Detection and Mitigation Strategies



Q&A