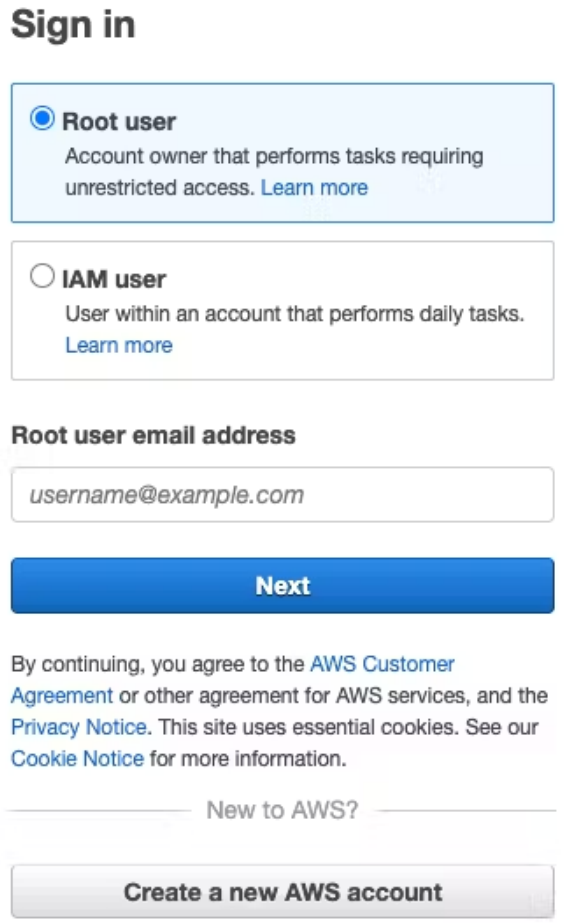
HEPAPI
DIGITAL TRANSITION PARTNER

SESSION-4:
IAM

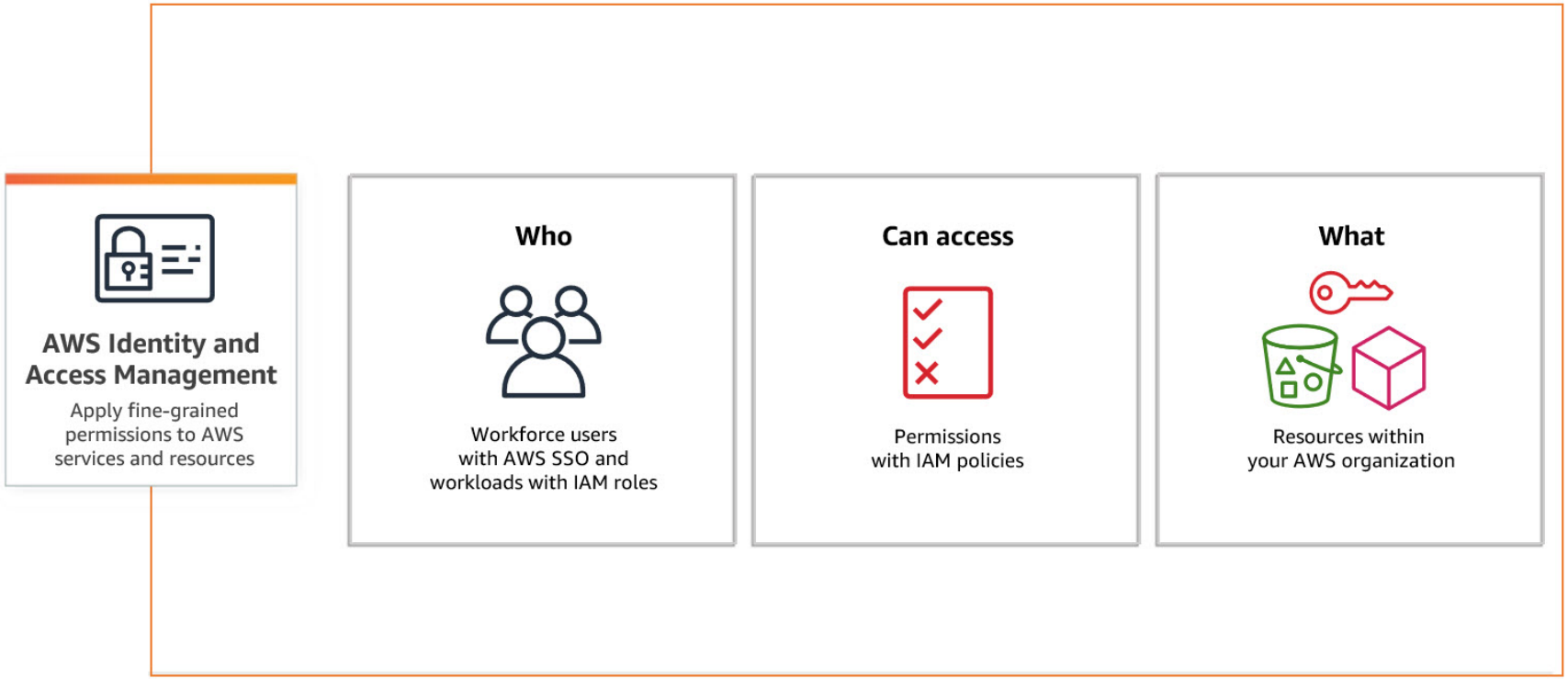
AWS Root User

- It has full access to all AWS resources.
- It shouldn’t be used for day-to-day interactions with AWS.



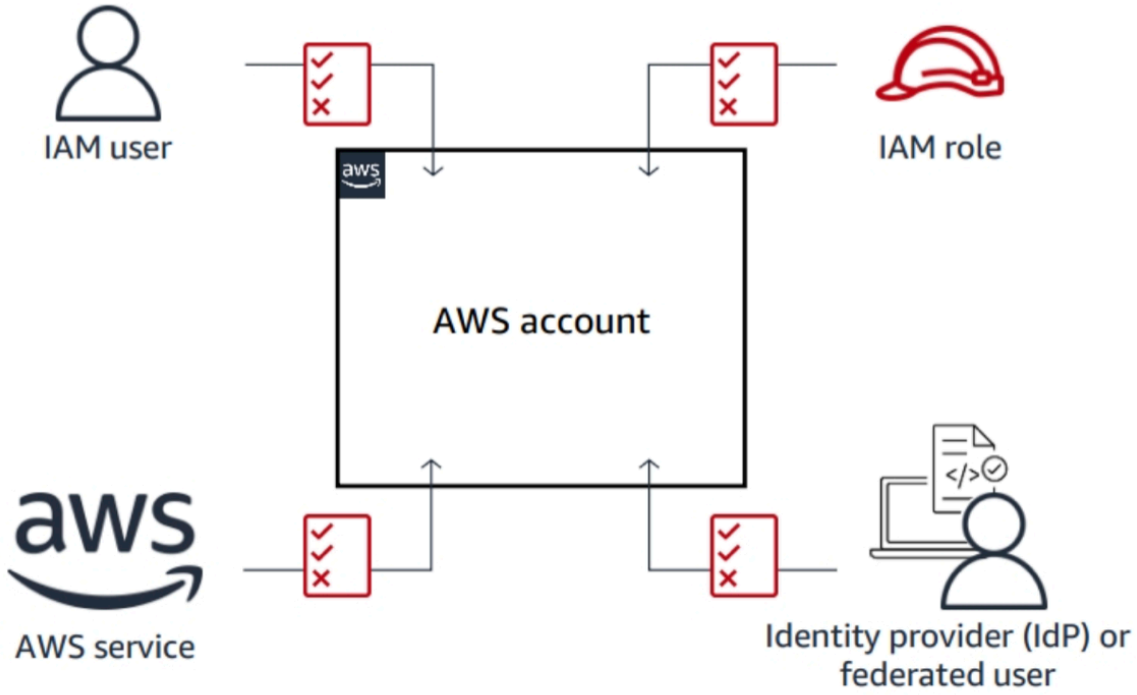
AWS Identity and Access Management (IAM)

- Create and manage users, groups and roles.
- Manage access to AWS resources and services.



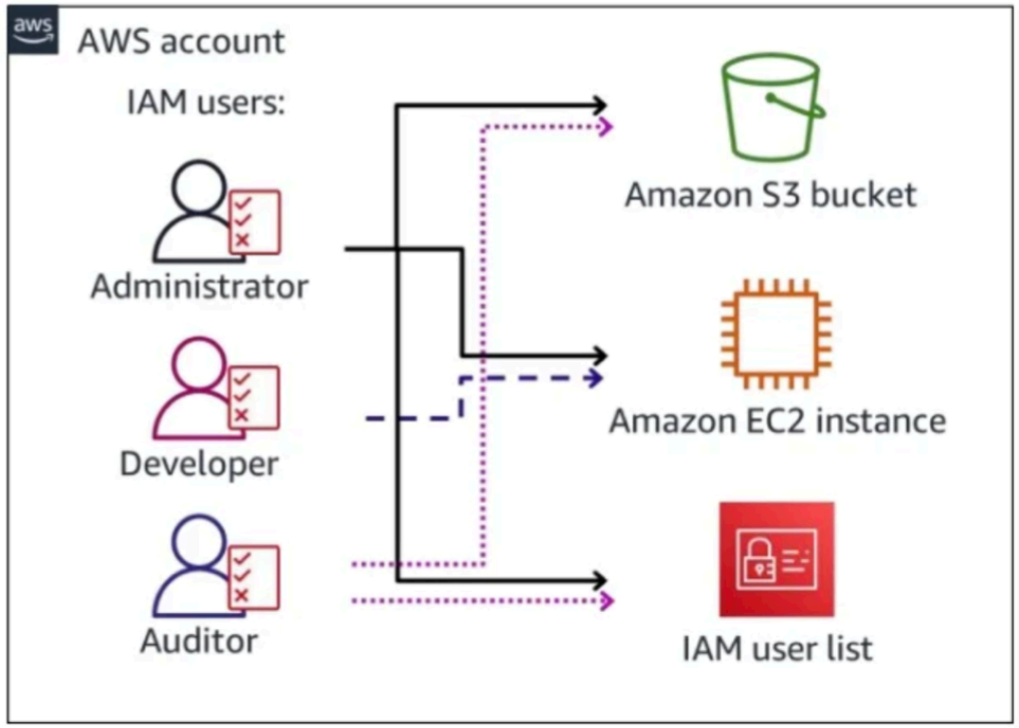
Principal

- It can make a request for an action or operation on an AWS resource.
- It can be a person, application, assumed role or federated user.

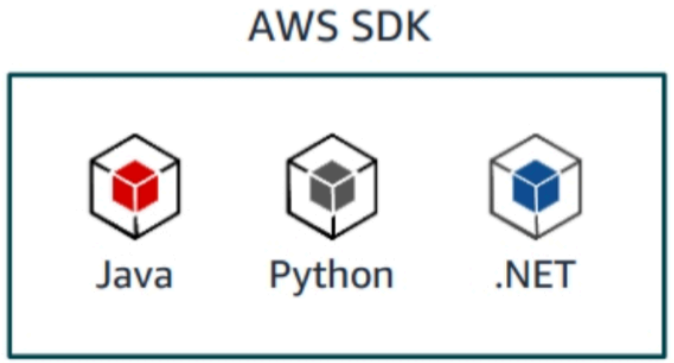


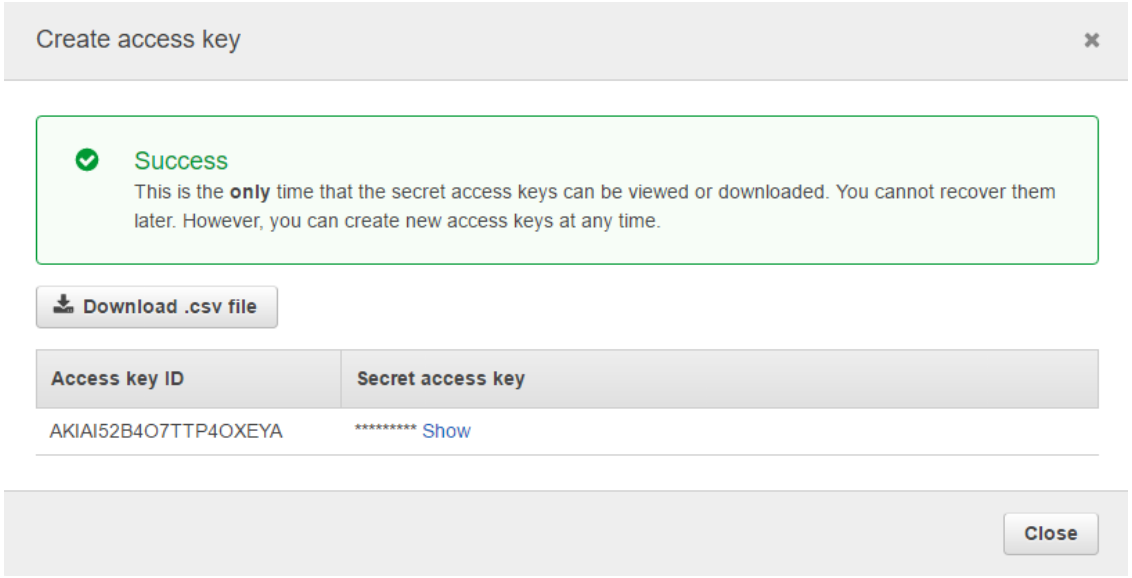
IAM Users

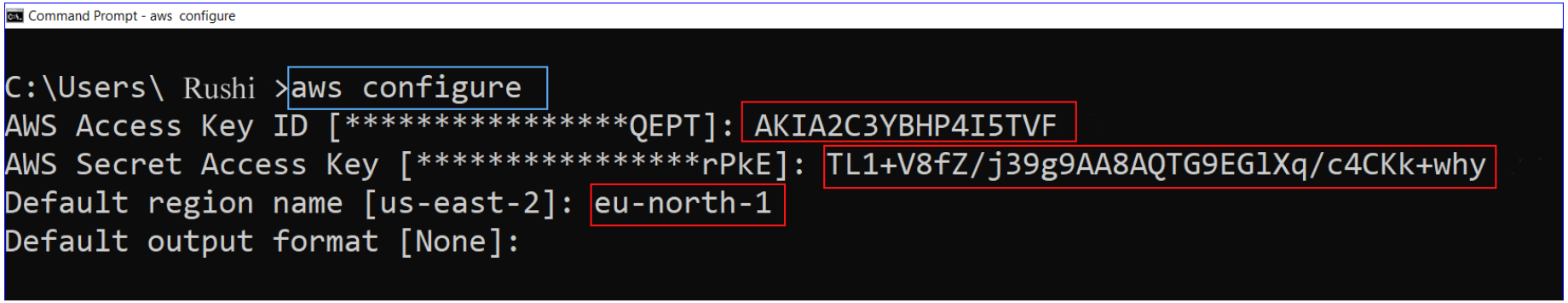
- They are users in the AWS account, each have different credential.
- They are able to perform specific AWS actions based on permissions.



Programmatic Access







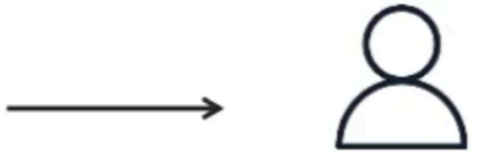
Setting Permissions with IAM Policies

IAM policy

Select	Policy name
	AdministratorAccess
	AmazonEC2ReadOnlyAccess
✓	AmazonS3FullAccess
	AmazonS3ReadOnlyAccess

Amazon S3 administrator

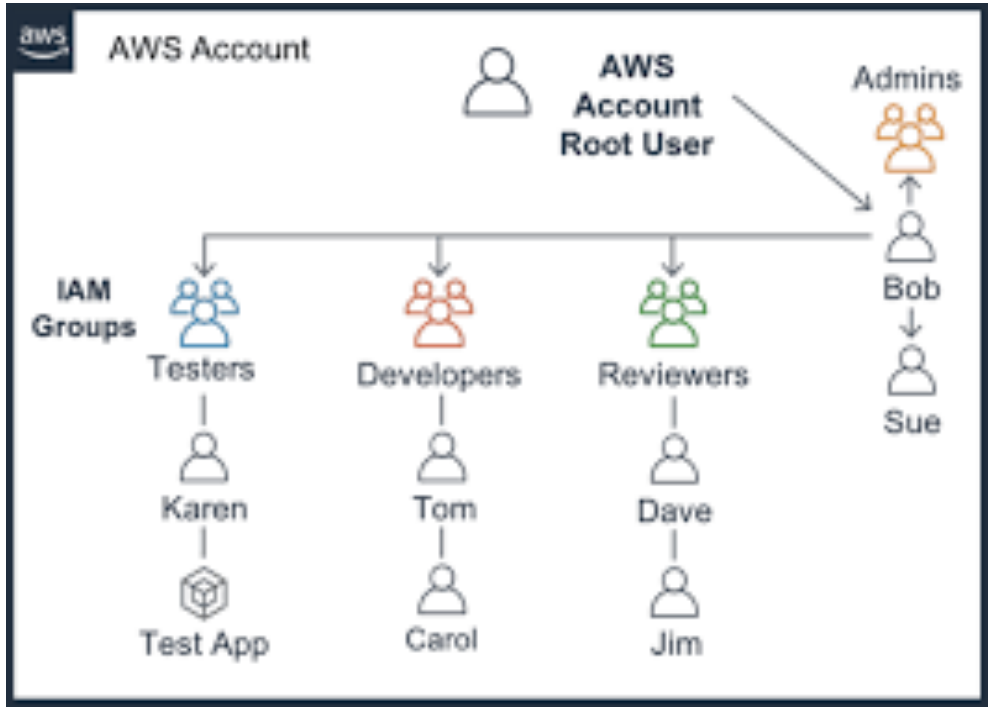
Select	Policy name
	AdministratorAccess
✓	AmazonEC2ReadOnlyAccess
	AmazonS3FullAccess
✓	AmazonS3ReadOnlyAccess



Auditor

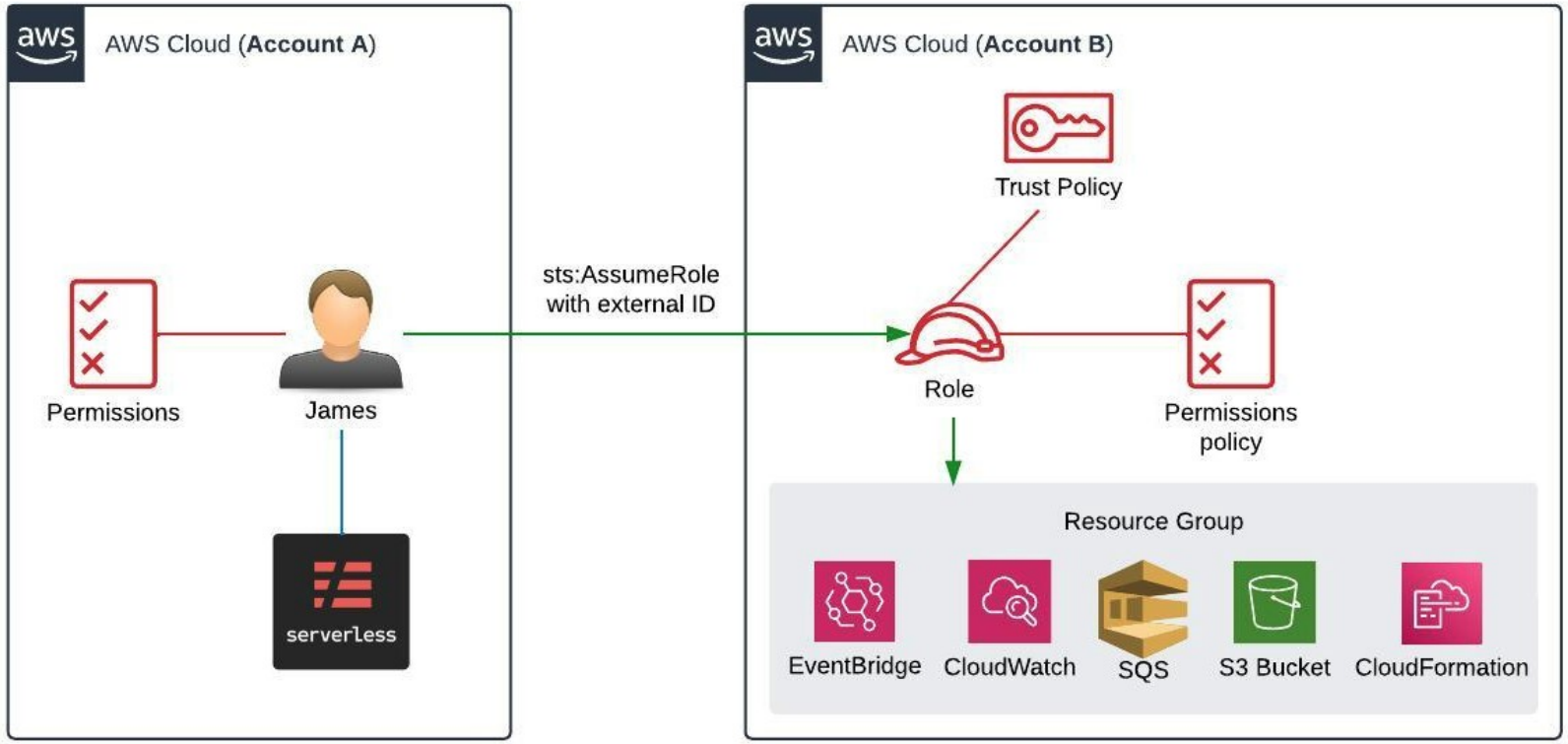
IAM User Groups

- IAM Users are assigned to IAM User Groups.
- Policies can be attached to IAM User Groups so that it can be applied to all IAM Users within the group.

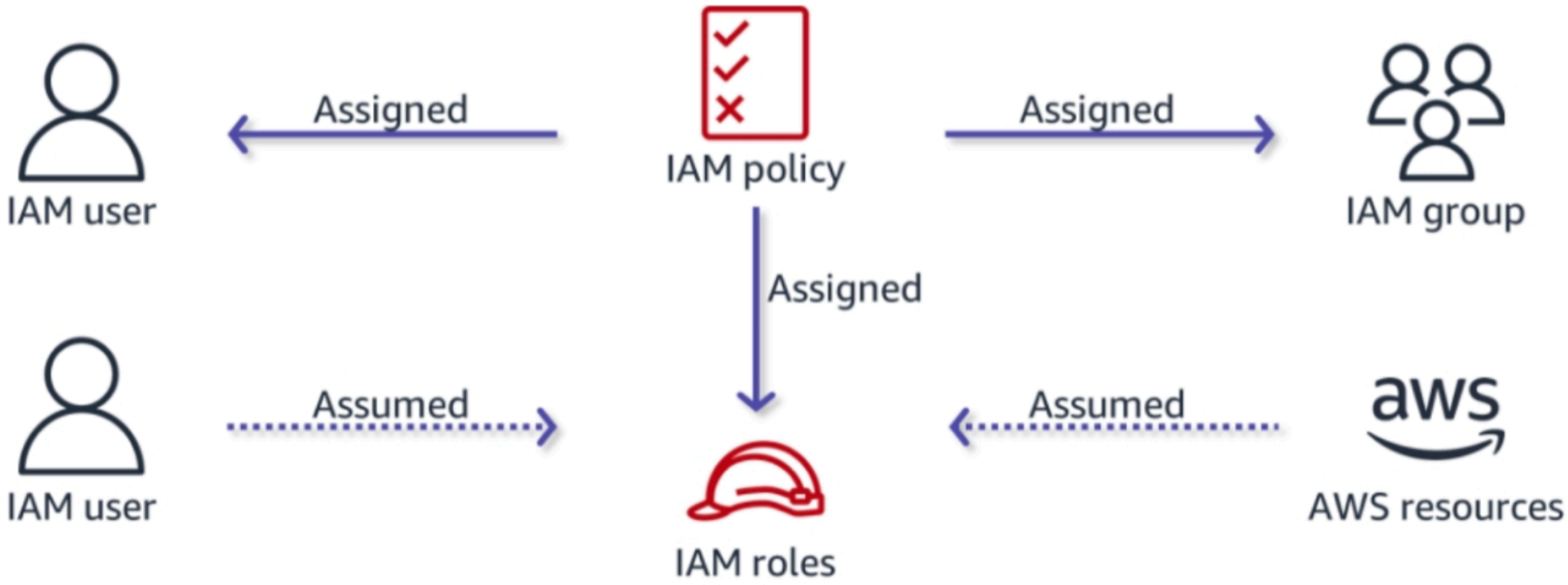


IAM Roles

- Set of permissions can be given to specific users or services.
- The role is assumed without credentials so that the permissions can be valid.

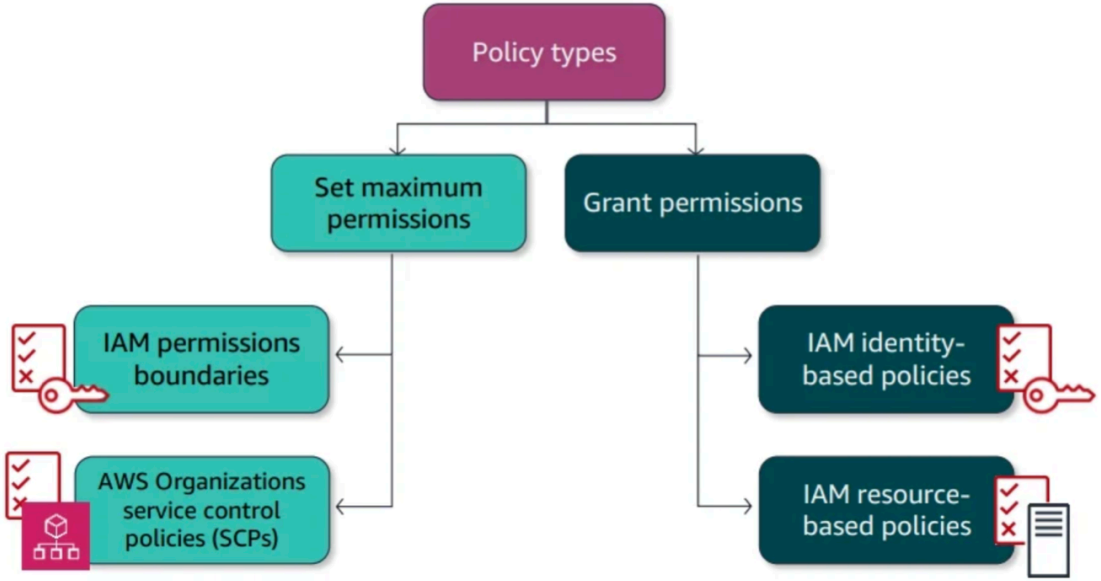


IAM Policy Assignment

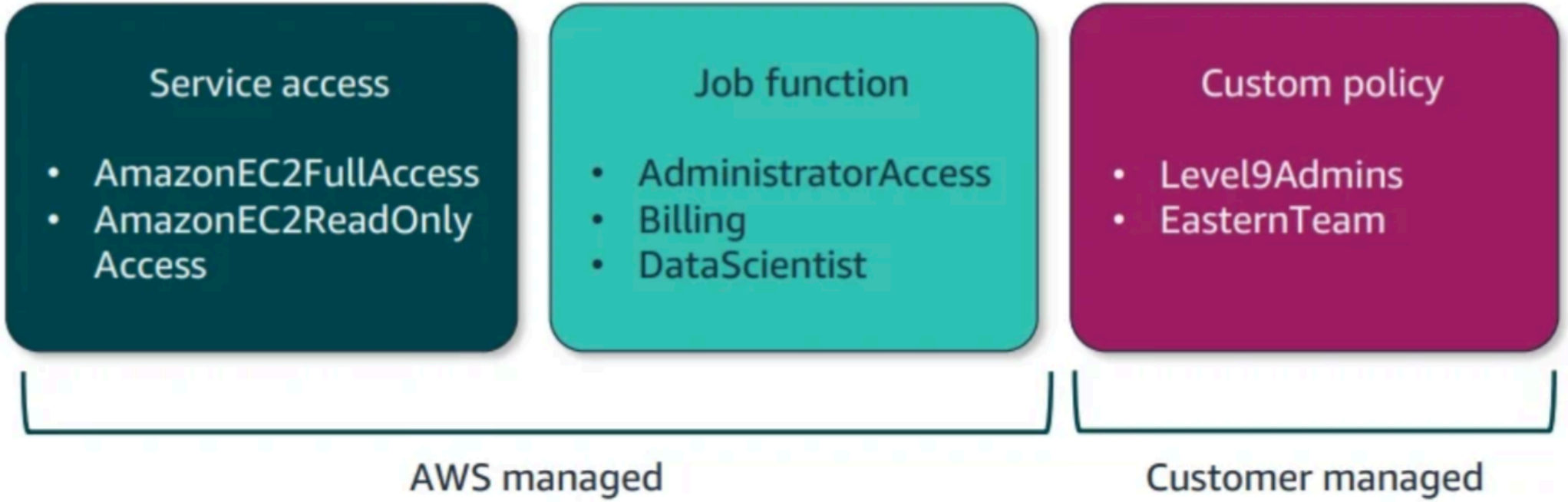


Security Policy Categories

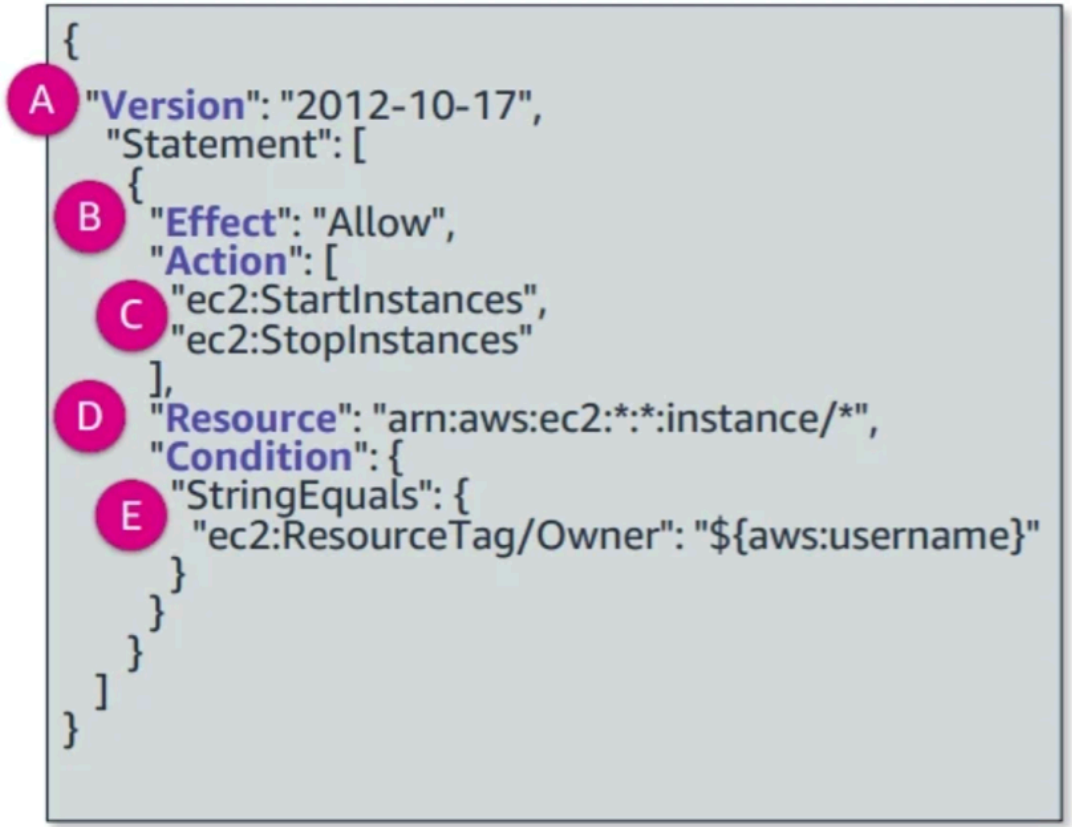
- Identity-based policies are assigned to users, groups and roles.
- Resource-based policies are assigned to resources and they are checked when someone tries to access the resource.
- IAM Permission Boundaries limit the user's permissions.



Identity-Based Policy Types



Identity-Based Policy Example



- **A** Use this version date to use all of the available policy features.
- **B** Indicate whether the policy allows or denies an action.
- **C** Include a list of actions that the policy allows or denies.
- **D** Choose a list of resources to which the effect applies.
- **E** Optional: Specify the conditions under which the policy applies.

Resource-Based Policy Example

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "StartStopIfTags",
            "Effect": "Allow",
            "Action": [
                "ec2:StartInstances",
                "ec2:StopInstances",
                "ec2:DescribeTags"
            ],
            "Resource": "arn:aws:ec2:region:account-id:instance/*",
            "Condition": {
                "StringEquals": {
                    "ec2:ResourceTag/Project": "DataAnalytics",
                    "aws:PrincipalTag/Department": "Data"
                }
            }
        }
    ]
}
```

Allow starting or stopping instances and describing the tags

All instances in the specified region and account id only

Only those instances with tag Project : DataAnalytics

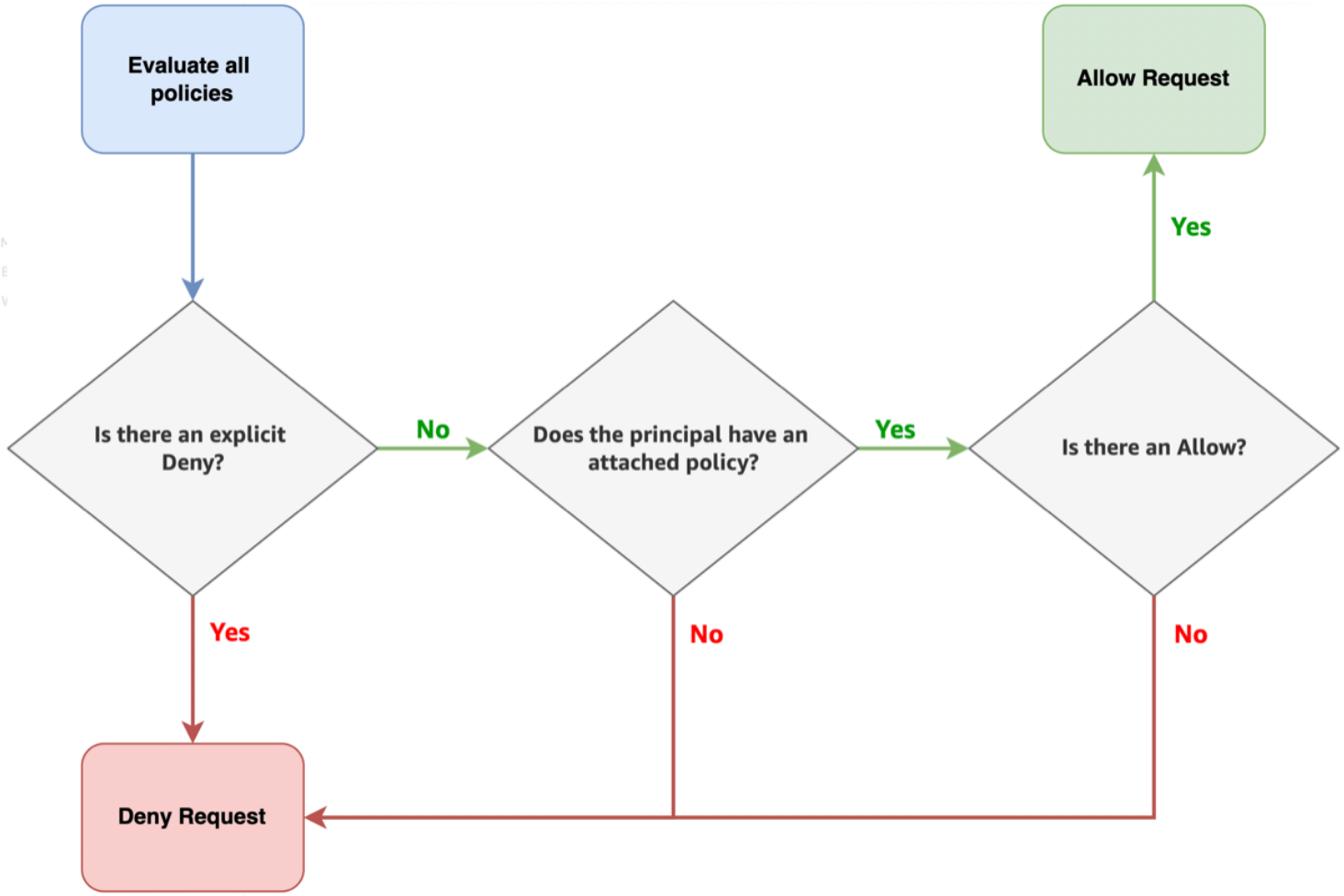
Only by the Principals with tag Department : Data

Explicit Allow and Explicit Deny

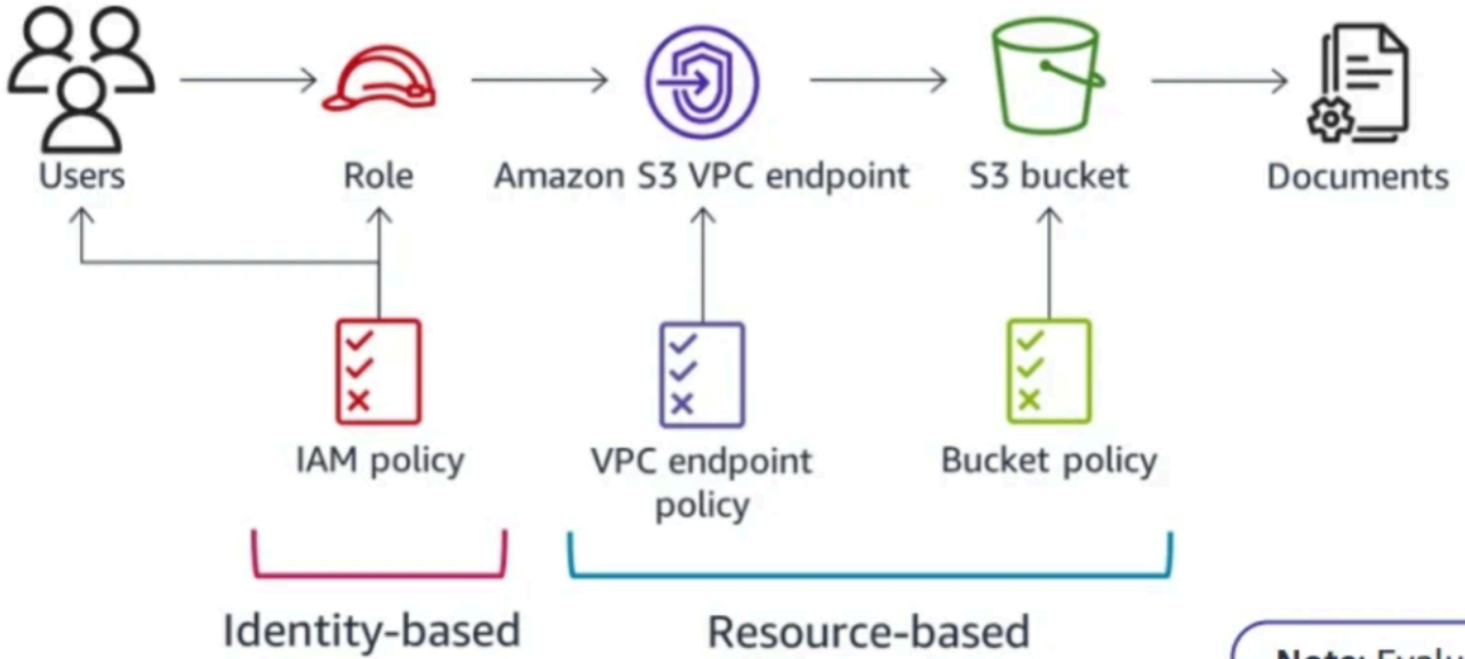
```
{
   "Effect": "Allow",
   "Action": [
      "s3:ListBucket",
      "s3:GetObject"
   ],
   "Resource": [
      "arn:aws:s3:::DOC-EXAMPLE-BUCKET",
      "arn:aws:s3:::DOC-EXAMPLE-BUCKET/*"
   ]
}
```

```
{
   "Effect": "Deny",
   "Action": [
      "ec2:*",
      "s3:*"
   ],
   "Resource": "*"
}
```

Policy Evaluation



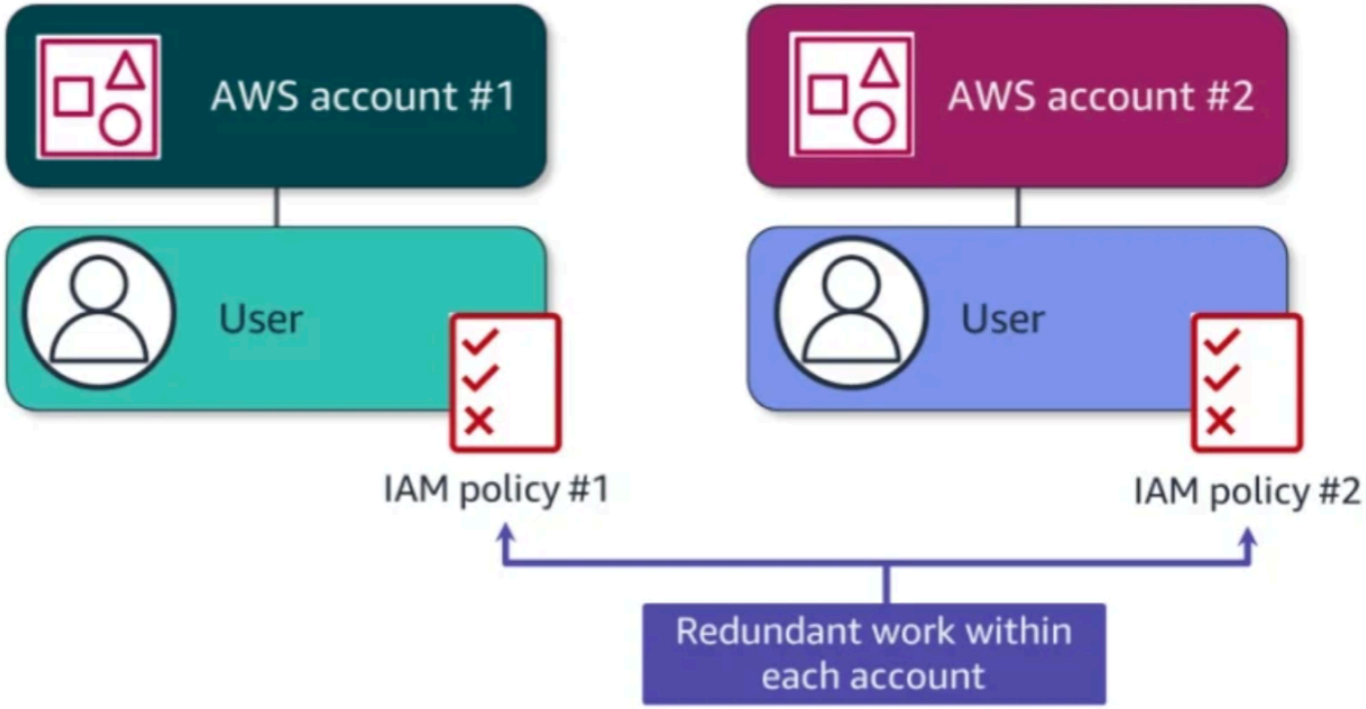
Architecture Tip



Note: Evaluate identity-based policies and resource-based policies together.

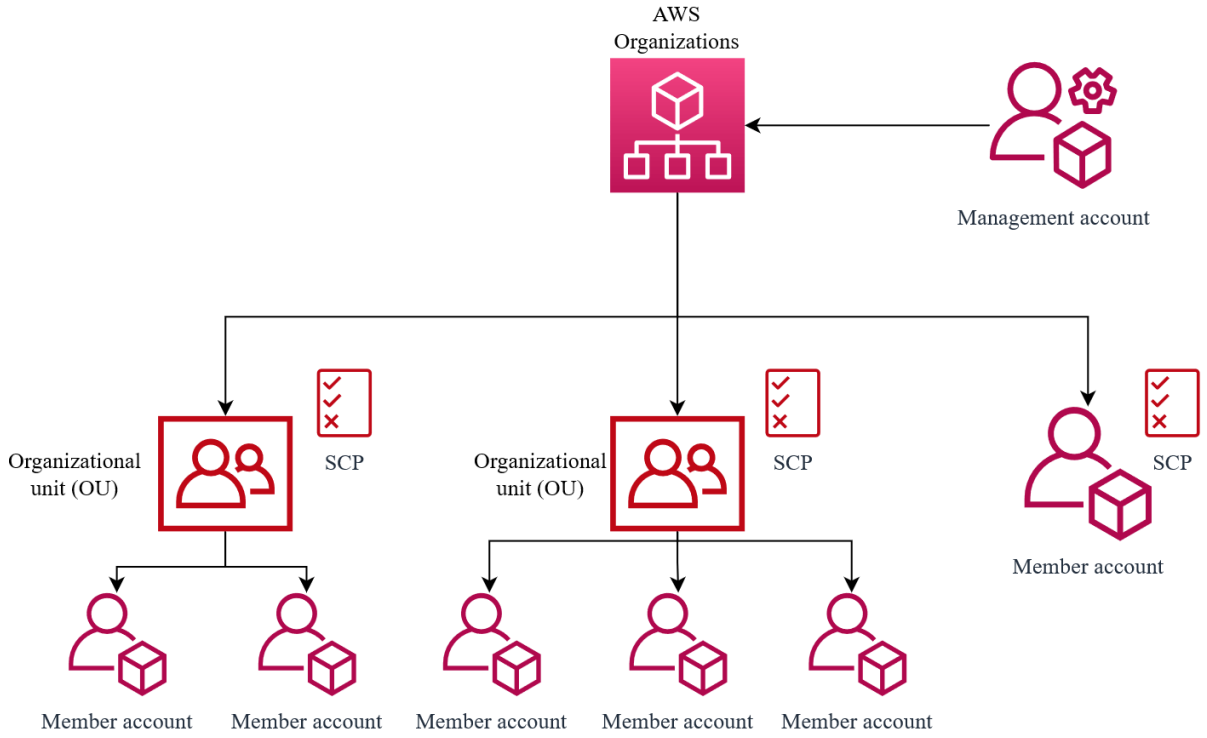
Without AWS Organizations

- IAM Policies only apply to individual principals in a single account.
- Policies must be managed in each account, resulting in generation of multiple bills.



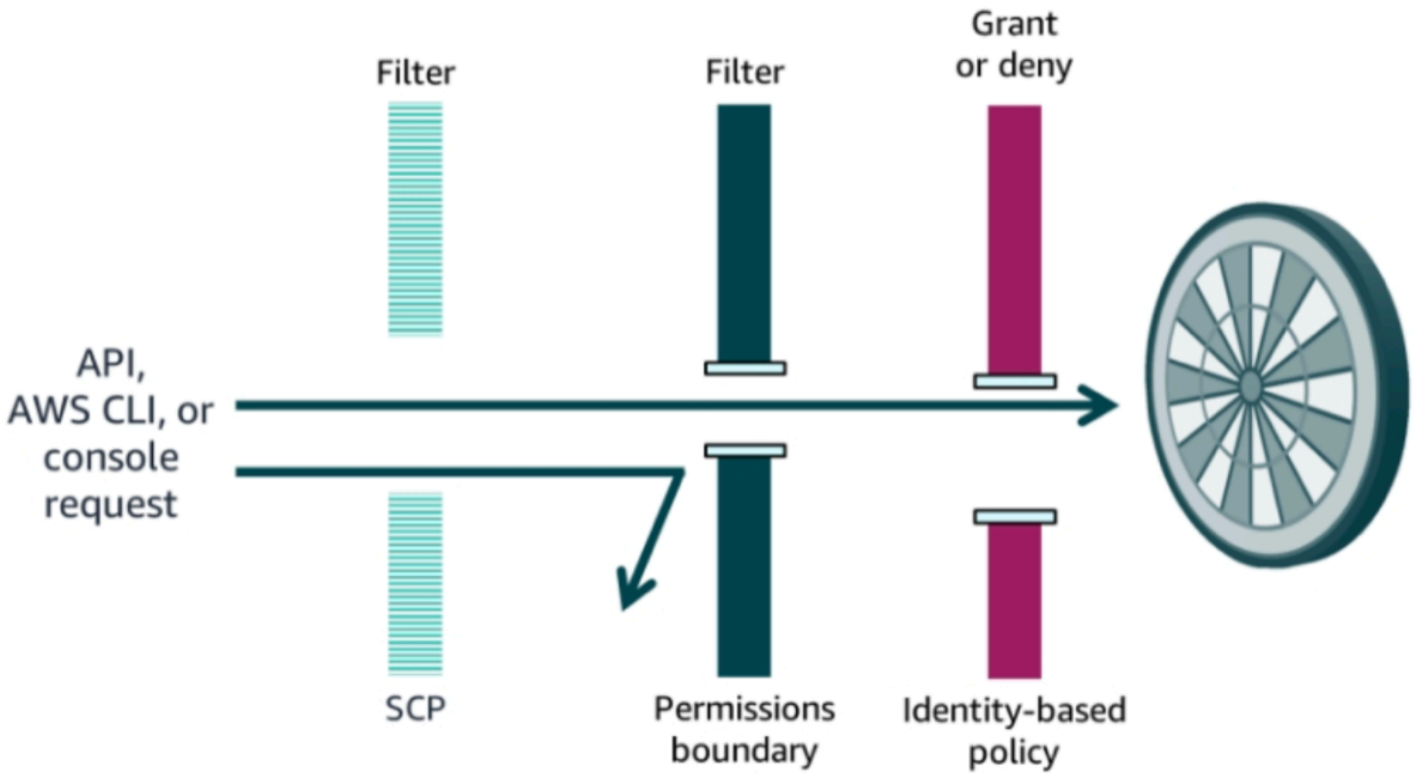
With AWS Organizations

- Enable to develop multi-account strategy for business needs.
- Create a hierarchy by grouping accounts into Organizational Units (OUs).
- Service Control Policies (SCPs) control maximum permissions in every account under OUs.



Layered Defense with Policies

- SCPs don’t grant permissions, they only act as a filter!



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THANKS FOR LISTENING