



AWS
re:Invent

C M P 3 3 5

Streamlining Amazon EC2 instance provisioning and management

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Agenda

Select an instance type

Provision

Connect

Automate

Monitor & adjust

Broad platform choice

Workloads

General purpose

Burstable

Compute-intensive

Memory-intensive

Storage (high I/O)

Dense storage

GPU compute

Graphics intensive

Inference

+

Capabilities

Choice of processor
(AWS, Intel, ARM, AMD)

Fast processors
(up to 4.0 GHz)

High-memory footprint
(up to 24 TiB)

Instance storage
(HDD and NVMe)

Accelerated computing
(GPUs and FPGA)

Networking
(up to 100 Gbps)

+

Options

Elastic Block Store

Elastic Graphics

Elastic Inference

=

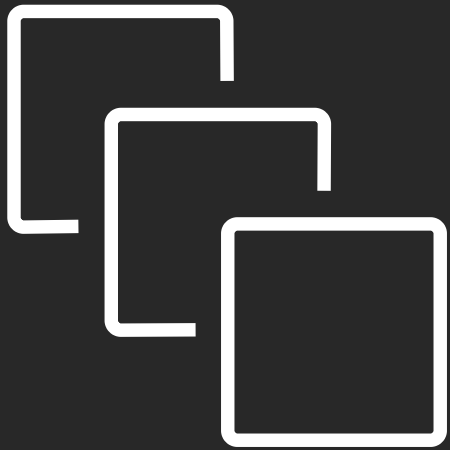
270+

instance types
for virtually
every workload
and business need

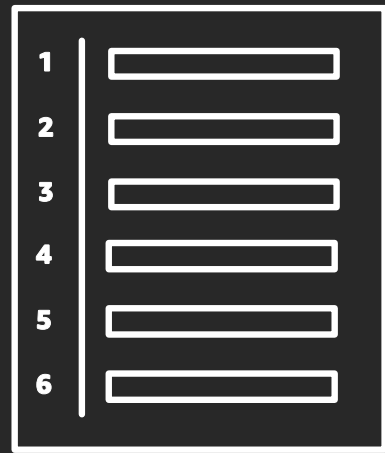
Demo: Select an EC2 instance type

EC2 services for instance launches

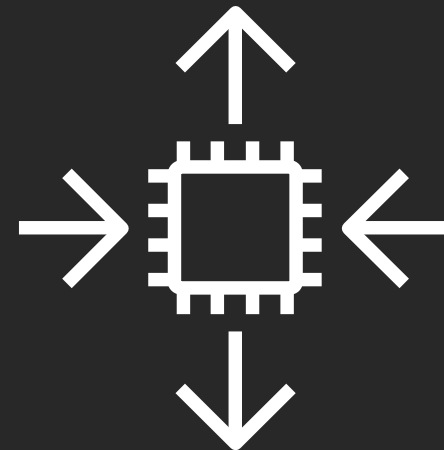
There are several ways to provision and scale



Run-instances



EC2 launch
templates



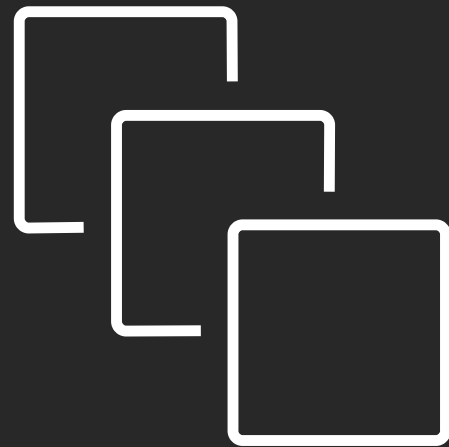
Amazon EC2
Auto Scaling



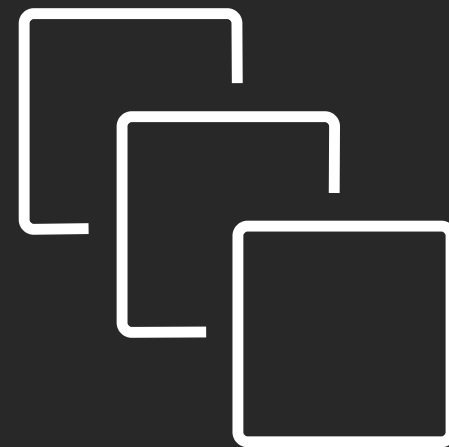
AWS
CloudFormation

Connecting to instances

Most commonly used ways to connect are SSH and RDP

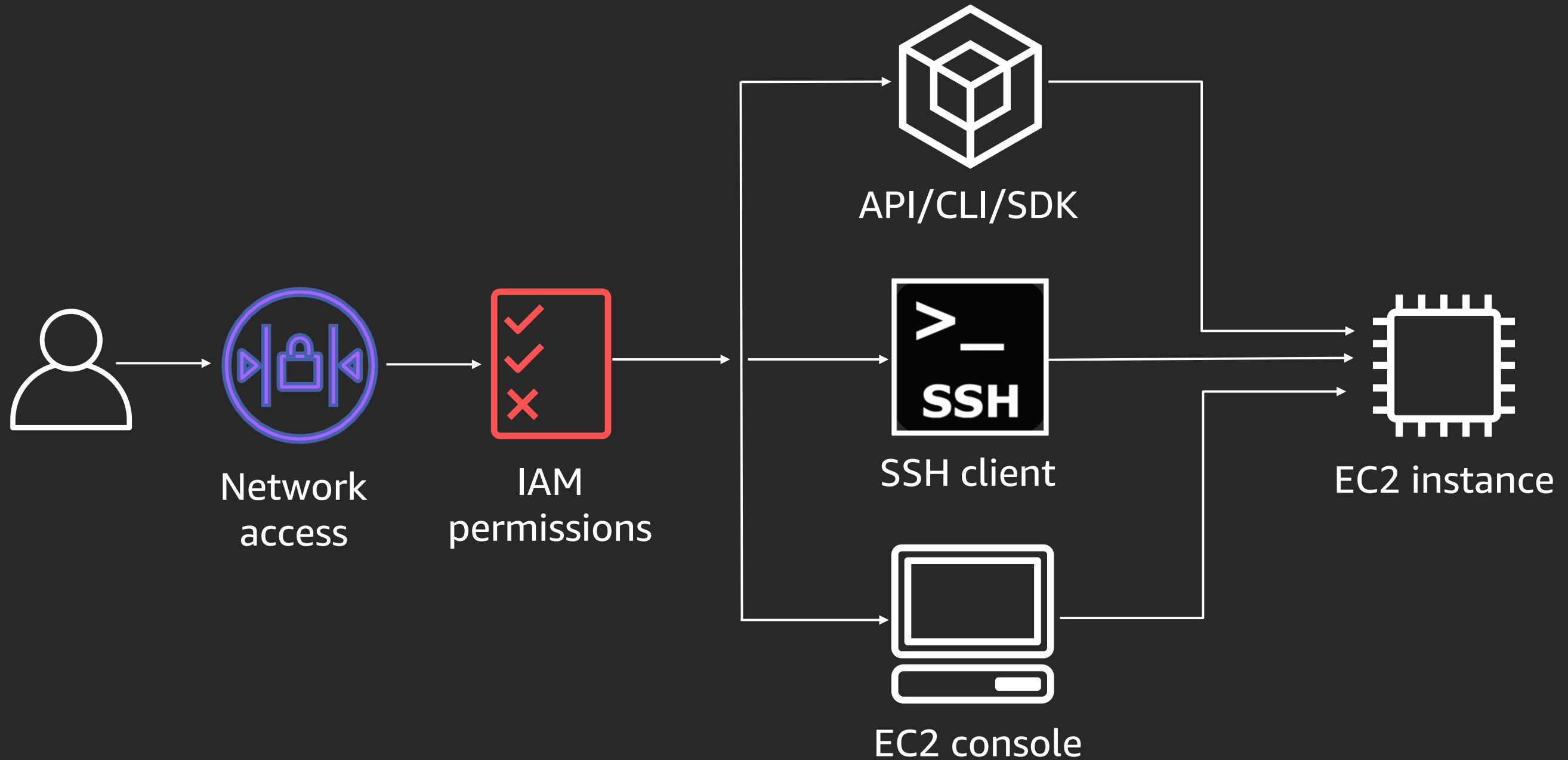


SSH (Linux)

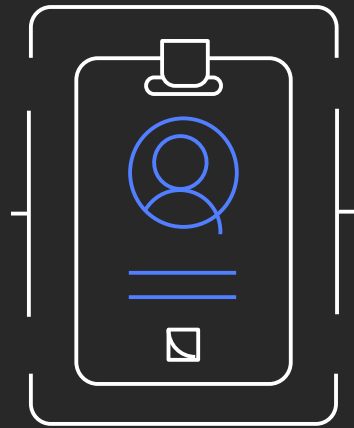


RDP (Windows)

Connect securely using EC2 instance connect



Use EC2 instance connect to achieve ...



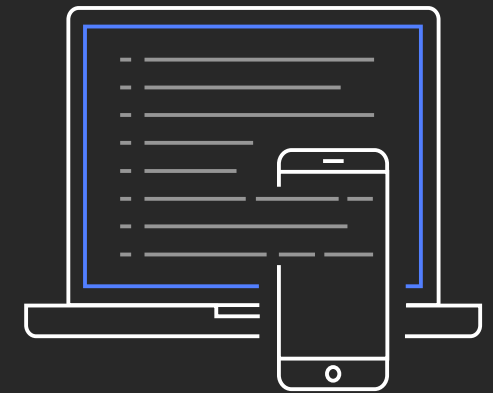
Centralized
access control



Short-lived
keys



Auditability



Ubiquitous
access

Demo: Launch & connect

Control access in a central place for your organization

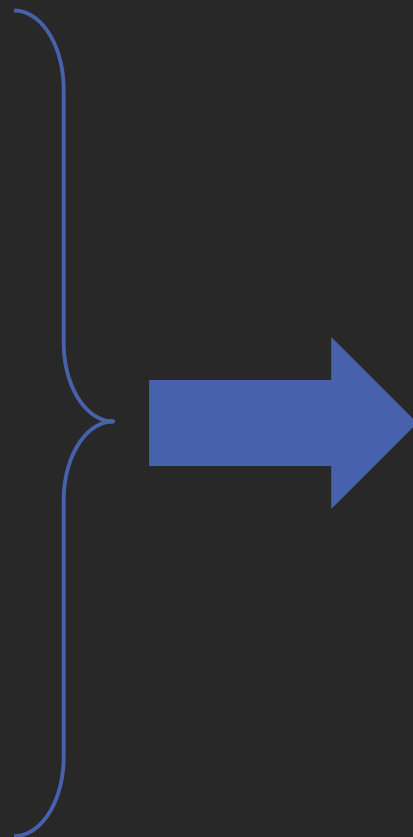
Permissions gated on use of a specific instance or OS user

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "ec2-instance-connect:SendSSHPublicKey",
      "Resource": [
        "arn:aws:ec2:region:account-id:instance/i-1234567890abcdef0",
        "arn:aws:ec2:region:account-id:instance/i-0598c7d356eba48d7"
      ],
      "Condition": {
        "StringEquals": {
          "ec2:osuser": "ami-username"
        }
      }
    }
  ]
}
```

Automate provisioning with launch templates

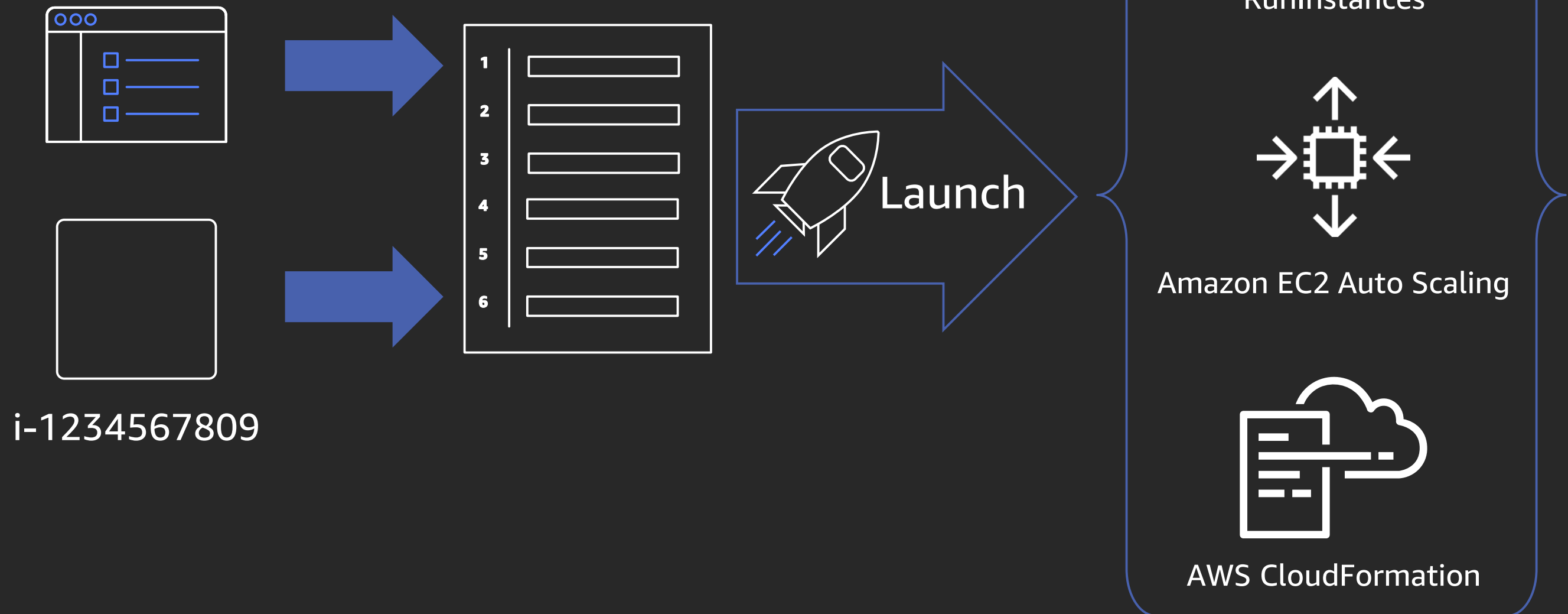
Templates contain all the information necessary to launch an instance

- AMI ID
- Instance type
- Network interfaces
- Block device mapping
- User data
- Tags
- And more...

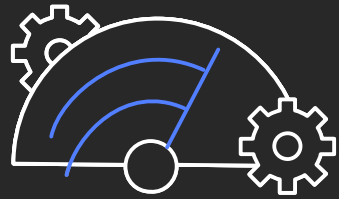


1	
2	
3	
4	
5	
6	

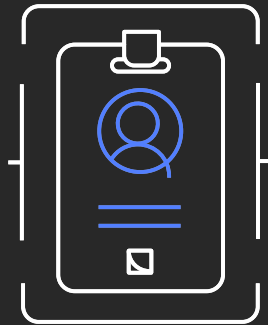
Automate provisioning with launch templates



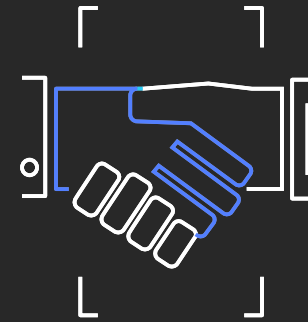
Automate: Use launch templates to achieve...



Increase
productivity



Simplified
permissions



Governance &
best practices



Consistent
experience

Demo: Launch templates with Amazon EC2 Auto Scaling

Simplify permissions with launch templates

Without launch templates

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "ec2:RunInstances"
      ],
      "Resource": [
        "arn:aws:ec2:us-east-1::image/*",
        "arn:aws:ec2:us-east-1:1234567890:subnet/*",
        "arn:aws:ec2:us-east-1:1234567890:network-interface/*",
        "arn:aws:ec2:us-east-1:1234567890:security-group/*",
        "arn:aws:ec2:us-east-1:1234567890:key-pair/*",
        "arn:aws:ec2:us-east-1:1234567890:instance/*",
        "arn:ec2:ec2:us-east-1:1234567890:snapshot",
        "arn:ec2:ec2:us-east-1:1234567890:elastic-gpu*"
      ]
    },
    {
      "Effect": "Allow",
      "Action": [
        "ec2:RunInstances"
      ],
      "Resource": [
        "arn:aws:ec2:us-east-1:1234567890:volume/*",
      ],
      "Condition": {
        "NumericLessThan": {
          "ec2:VolumeSize" : "X"
        }
      }
    },
    {
      "Effect": "Allow",
      "Action": [
        "ec2:CreateTags"
      ],
      "Resource": "arn:aws:ec2:us-east-1:1234567890:*/*",
      "Condition": {
        "StringEquals": {
          "ec2:CreateAction" : "RunInstances"
        }
      }
    }
  ]
}
```

With launch templates

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "ec2:RunInstances",
      "Resource": "*",
      "Condition": {
        "ArnLike": {
          "ec2:LaunchTemplate": "arn:aws:ec2:region:account:launch-template/* or actual template id"
        }
      }
    }
  ]
}
```

Simplify permissions with launch templates

Without launch templates

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": [
        "ec2:RunInstances"
      ],
      "Resource": [
        "arn:aws:ec2:us-east-1::image/*",
        "arn:aws:ec2:us-east-1:1234567890:subnet/*",
        "arn:aws:ec2:us-east-1:1234567890:network-interface/*",
        "arn:aws:ec2:us-east-1:1234567890:key-pair/*",
        "arn:aws:ec2:us-east-1:1234567890:instance/*",
        "arn:aws:ec2:us-east-1:1234567890:snapshot/*",
        "arn:aws:ec2:us-east-1:1234567890:elastic-gpu/*",
        "arn:aws:ec2:us-east-1:1234567890:volume/*",
        "arn:aws:ec2:us-east-1:1234567890:tags/*"
      ]
    },
    {
      "Effect": "Allow",
      "Action": [
        "ec2:RunInstances"
      ],
      "Resource": [
        "arn:aws:ec2:us-east-1:1234567890:instance/*"
      ],
      "Condition": {
        "NumericLessThan": {
          "ec2:VolumeSize": "100"
        }
      }
    },
    {
      "Effect": "Allow",
      "Action": [
        "ec2:CreateTags"
      ],
      "Resource": "arn:aws:ec2:us-east-1:1234567890:instance/*",
      "Condition": {
        "StringEquals": {
          "ec2:CreateAction": "RunInstances"
        }
      }
    }
  ]
}
```

Image
Subnet
Network interface
Security group
Key pair
Instance
Snapshot
Elastic GPU
Volume
Tags

With launch templates

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "ec2:RunInstances",
      "Resource": "*",
      "Condition": {
        "ArnLike": {
          "ec2:LaunchTemplateName": "arn:aws:ec2:us-east-1:1234567890:launch-template/*"
        }
      }
    }
  ]
}
```

Launch template

Enforce best practices across your organization

Permissions gated on use of a specific launch template

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "ec2:RunInstances",
      "Resource": "*",
      "Condition": {
        "ArnLike": {
          "ec2:LaunchTemplate": "arn:aws:ec2:region:account:launch-template/*"
        },
        "Condition": {
          "StringEquals": {
            "ec2:ResourceTag/env": "DEV"
          }
        }
      }
    }
  ]
}
```

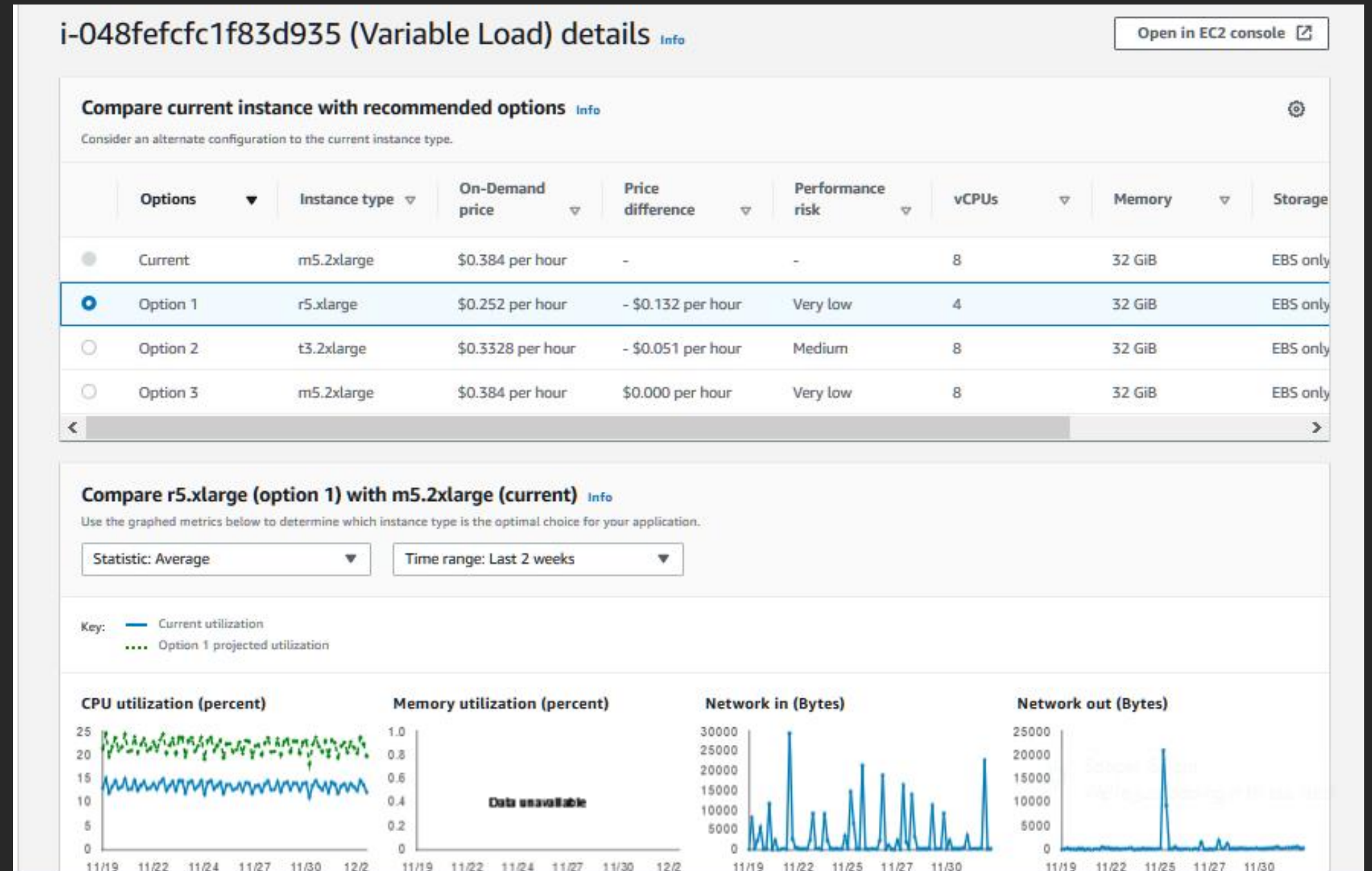
Enforce best practices across your organization

Permissions gated on use of a specific launch template

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Effect": "Allow",
      "Action": "ec2:RunInstances",
      "Resource": "*",
      "Condition": {
        "ArnLike": {
          "ec2:LaunchTemplate": "arn:aws:ec2:region:account:launch-template/(  
* or actual template  
id)"
        },
        "Condition": {
          "StringEquals": {
            "ec2:ResourceTag/env": "DEV"
          }
        }
      }
    }
  ]
}
```

Monitor & adjust: Right size resources with AWS Compute Optimizer

Get tailored instance type recommendations



Demo: Update instance type in your automation

Roadmap

- Validate launch requests
- Tag-based authorization for EIC
- EIC support for popular Linux distros (RHEL, CentOS)
- Inheritance between LTs
- Library of AWS published LTs
- Instance type recommendations for new workloads

Tell us what's important to you!

Related breakouts

CMP326 – Capacity management made easy with Amazon EC2 Auto Scaling

CMP313 – Save by using multiple purchase options with Amazon EC2 Auto Scaling

CMP301 – Amazon EC2 foundations

CMP323 – Optimize performance and cost for your AWS compute

Thank you!

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