AWS re:Invent

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CON203

Dive deep into AWS Copilot

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Agenda

What is AWS Copilot

Benefits

Architecture first patterns

Behind the curtains

Interactive demo

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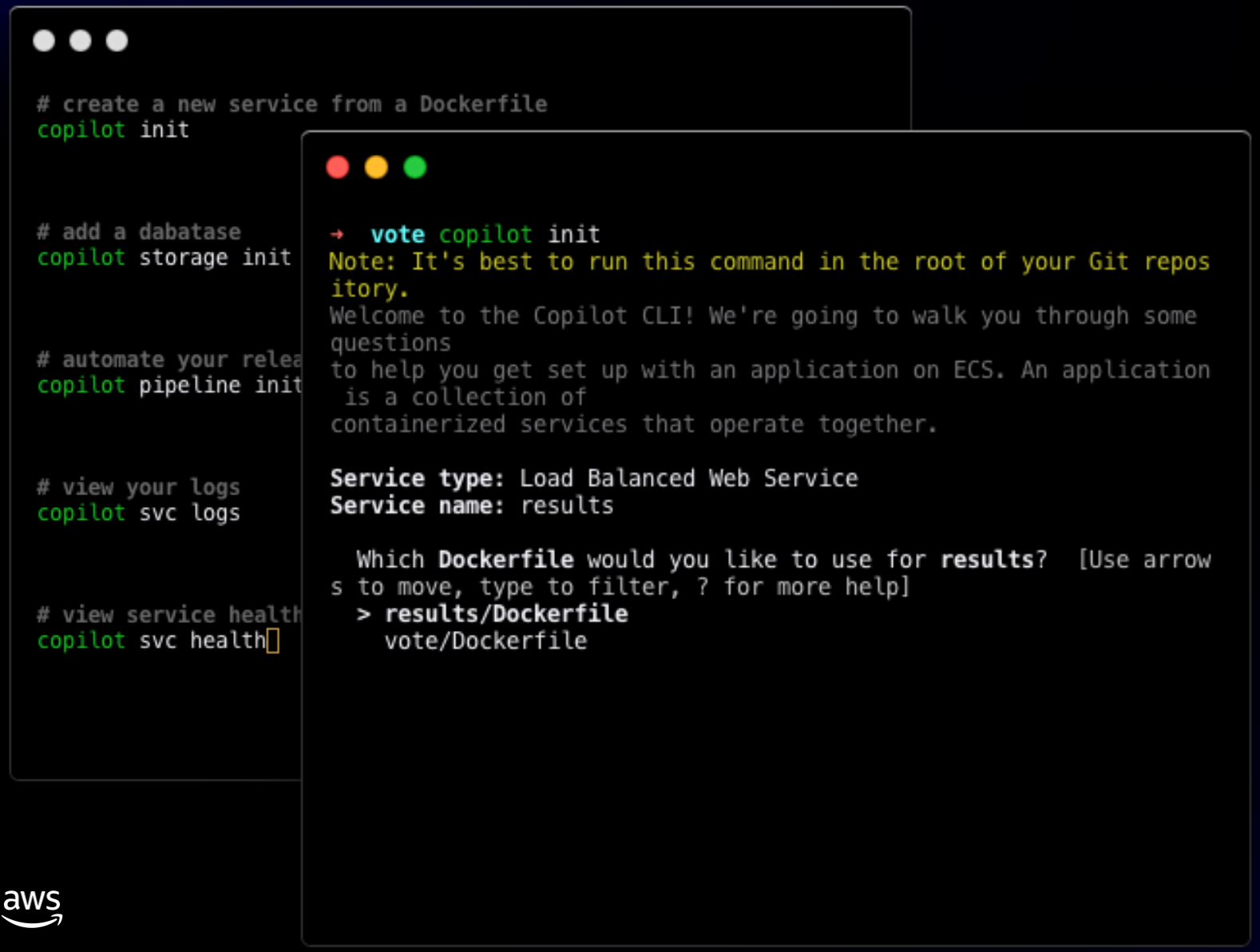
What is AWS Copilot

CLI to build, release, and operate
containerized applications on AWS

https://aws.github.io/copilot-cli

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Build



Get started with common cloud architectures

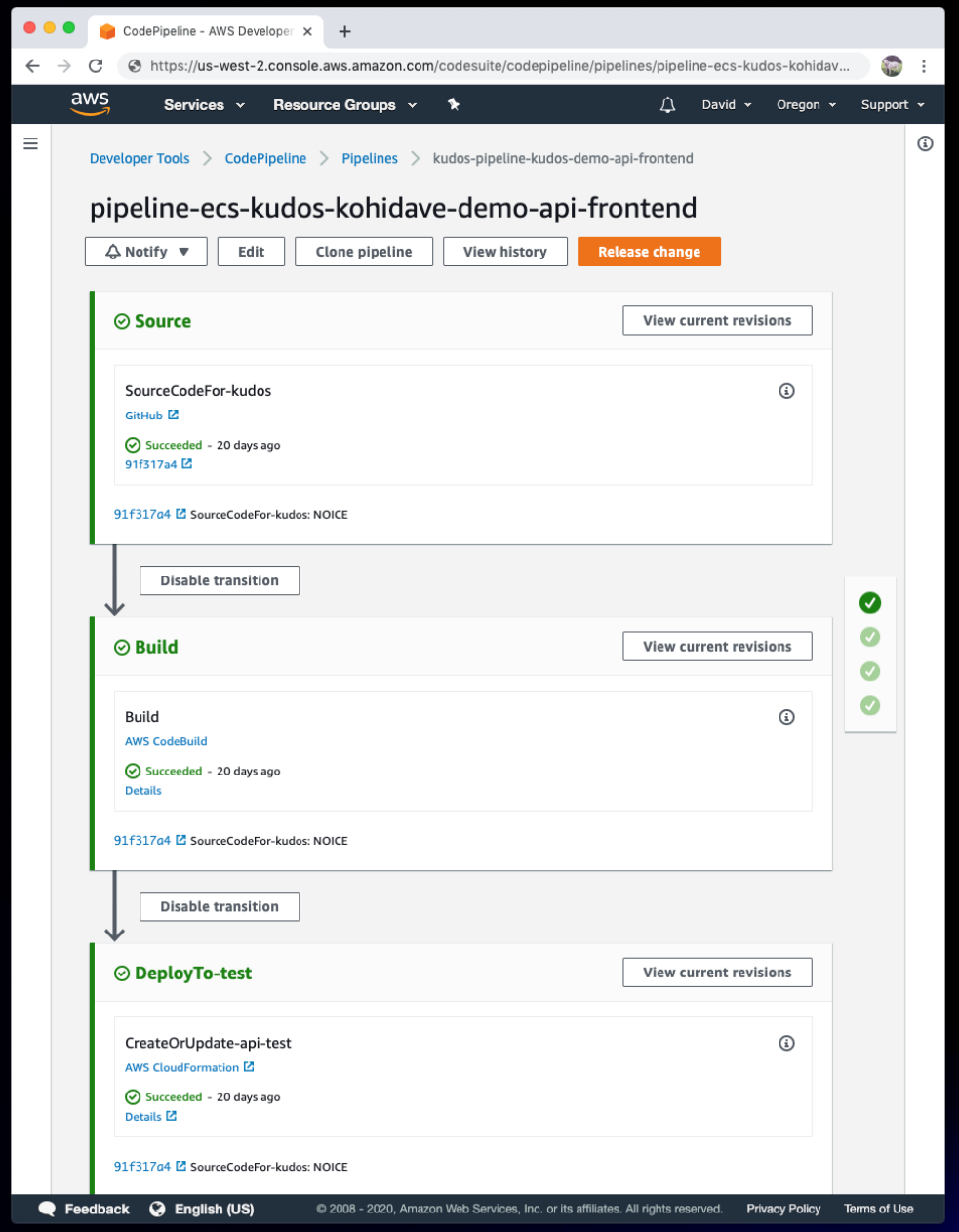
Customize with domains, add-ons for storage, secrets

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Release

Connect your source code in GitHub, Bitbucket, or AWS CodeCommit to a continuous delivery pipeline

```
[~] copilot pipeline init
```



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Operate

```
147dda3888c0:api uttara$ copilot svc status
Found only one deployed service api in environment test
Task Summary

  Running   ▀▀▀▀▀▀▀▀▀▀  7/10 desired tasks are running
  Health    ▀▀▀▀▀▀▀▀▀▀  4/10 passes container health checks

Tasks

  ID        Status      Revision    Started At     Cont. Health
  --        ------      --------    ----------     ------------
  180d1009  PENDING     1           -              UNKNOWN
  2173d164  RUNNING     1           8 seconds ago  HEALTHY
  267fec4f  PENDING     1           -              UNKNOWN
  5c84fb06  RUNNING     1           7 seconds ago  UNKNOWN
  7caf5f82  RUNNING     1           7 seconds ago  HEALTHY
  8441f0b8  RUNNING     1           2 seconds ago  HEALTHY
  85246172  RUNNING     1           9 minutes ago  HEALTHY
  9d117d62  RUNNING     1           8 seconds ago  UNKNOWN
  b8d15718  PENDING     1           -              UNKNOWN
  db9d362f  RUNNING     1           7 seconds ago  UNKNOWN

Alarms

  Name                          Condition                    Last Updated   Health
  ----                          ---------                    ------------   ------
  TargetTracking-service/voting- CPUUtilization > 70.00 for 3 d 5 minutes ago  OK
  app-new-test-Cluster-8nNofShh9 atapoints within 3 minutes
  ENR/voting-app-new-test-api-Se
  rvice-ExhGzbfrLCoC-AlarmHigh-9
  b04dfd8-fcef-461e-8fd4-10cadc1
  1750f

  TargetTracking-service/voting- CPUUtilization < 63.00 for 15  7 minutes ago  INSUFFICIENT_DATA
  app-new-test-Cluster-8nNofShh9 datapoints within 15 minutes
  ENR/voting-app-new-test-api-Se
  rvice-ExhGzbfrLCoC-AlarmLow-23
  31f717-7966-46a7-a43d-45cef458
  05a5
```

View the health

Tail your logs

Shell into a running container

Configure auto scaling

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Benefits

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Why



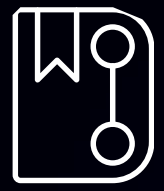
Think in terms of architecture, not infrastructure



Simple and powerful config



Continuous delivery



Operations is part of the workflow

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Architecture-first patterns

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What we want for any application



- Best practices architecture
- Customizability with additional resources
- Automated release process to test and production environments
- Is secure and cost efficient



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Out-of-the-box patterns

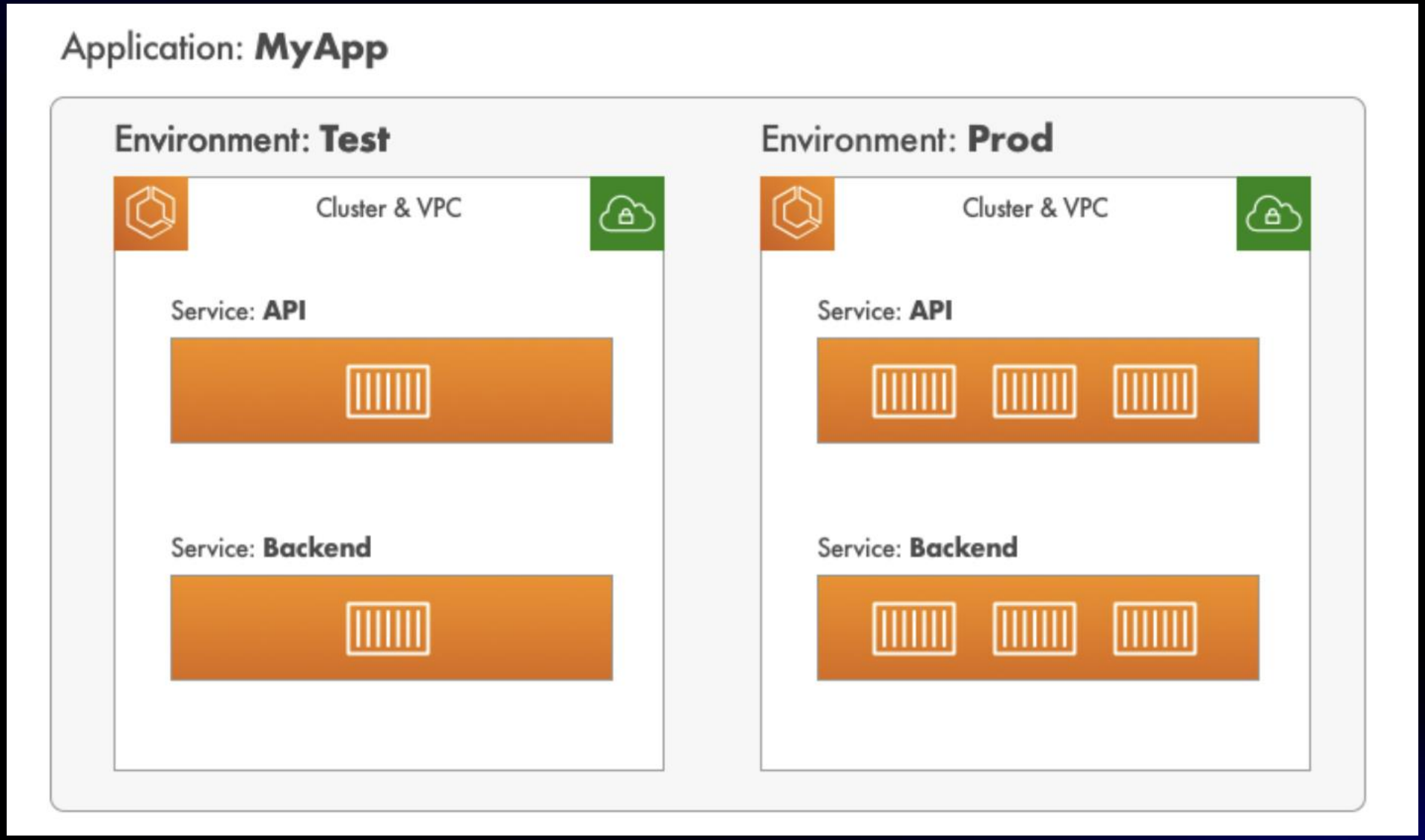
```
Which workload type best represents your architecture?  [Use arrows to move, type
> Request-Driven Web Service  (App Runner)
  Load Balanced Web Service   (Internet to ECS on Fargate)
  Backend Service             (ECS on Fargate)
  Worker Service              (Events to SQS to ECS on Fargate)
  Scheduled Job               (Scheduled event to State Machine to Fargate)
```

Bring your own custom resources:

- Import your VPC
- Configure domain name
- Add storage
- Any “add-ons”

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Terminologies



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Behind the curtains

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Copilot is creating infrastructure for

Application and environment

```
✔ Created ECR repositories for service api..

All right, you're all set for local development.
Deploy: Yes

✔ Linked account 654224422760 and region us-east-2 to application voting-app-new..

✔ Proposing infrastructure changes for the voting-app-new-test environment.
– Creating the infrastructure for the voting-app-new-test environment.    [create complete]  [75.7s]
  – An IAM Role for AWS CloudFormation to manage resources                [create complete]  [16.2s]
  – An ECS cluster to group your services                                 [create complete]  [10.3s]
  – Enable long ARN formats for the authenticated AWS principal           [create complete]  [0.8s]
  – An IAM Role to describe resources in your environment                 [create complete]  [16.2s]
  – A security group to allow your containers to talk to each other       [create complete]  [6.4s]
  – An Internet Gateway to connect to the public internet                 [create complete]  [16.0s]
  – Private subnet 1 for resources with no internet access                [create complete]  [16.2s]
  – Private subnet 2 for resources with no internet access                [create complete]  [16.2s]
  – Public subnet 1 for resources that can access the internet            [create complete]  [16.2s]
  – Public subnet 2 for resources that can access the internet            [create complete]  [16.2s]
  – A Virtual Private Cloud to control networking of your AWS resources   [create complete]  [17.0s]
✔ Created environment test in region us-east-2 under application voting-app-new.
```

- Amazon VPC subnets
- Security groups
- IAM
- Amazon ECR repositories
- Amazon ECS Cluster
- Application Load Balancer
- ACM certificates

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Copilot is creating infrastructure for

Service

```
✔ Proposing infrastructure changes for stack voting-app-new-test-api
- Creating the infrastructure for stack voting-app-new-test-api              [create in progress]  [1015.8s]
  - An Addons CloudFormation Stack for your additional AWS resources         [create complete]     [863.6s]
    - The {{logicalIDSafe .ClusterName}} Aurora Serverless database cluster  [create complete]     [454.0s]
    - A Secrets Manager secret to store your DB credentials                  [create complete]     [0.0s]
  - An autoscaling target to scale your service's desired count              [not started]
  - Service discovery for your services to communicate within the VPC        [create complete]     [0.0s]
  - Update your environment's shared resources                               [create complete]     [0.0s]
  - An IAM Role for the Fargate agent to make AWS API calls on your behalf   [create complete]     [11.2s]
  - A CloudWatch log group to hold your service logs                         [create complete]     [0.0s]
  - An ECS service to run and maintain your tasks in the environment cluster [create in progress]  [95.7s]
    Deployments
                Revision  Rollout        Desired  Running  Failed  Pending
      PRIMARY   1         [in progress]  1        1        0       0
  - An ECS task definition to group your containers and run them on ECS      [create complete]     [0.0s]
  - An IAM role to control permissions for the containers in your tasks      [create complete]     [13.0s]
```

- Amazon ECS Service
- AWS Fargate Tasks
- Service Discovery Monitoring
- Auto scaling
- Aurora DB
- AWS Secrets Manager

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Thank you!

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