

AWS re:Invent

NOV. 28 – DEC. 2, 2022 | LAS VEGAS, NV

D O P 3 2 1

Organize application components into repositories & pipelines with AWS CDK

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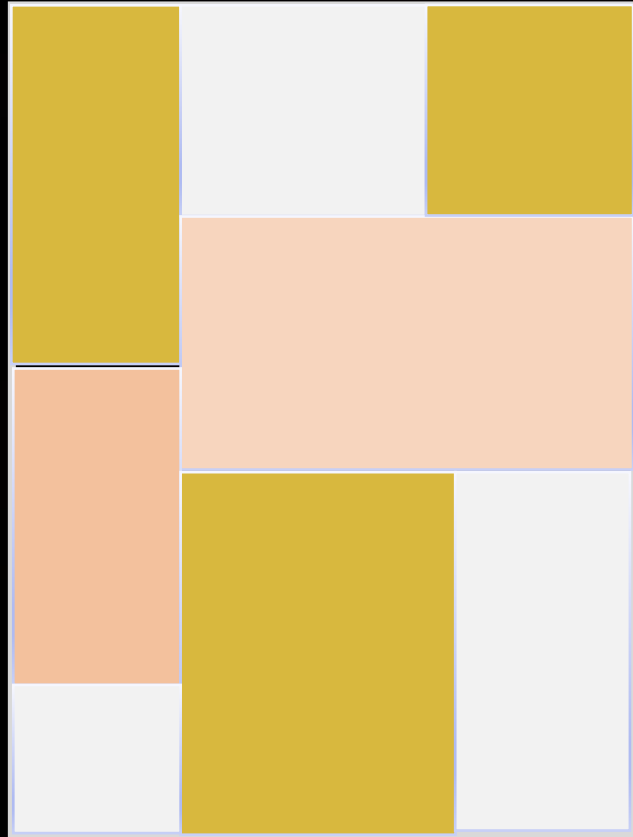
Two hard software engineering problems

Naming
things

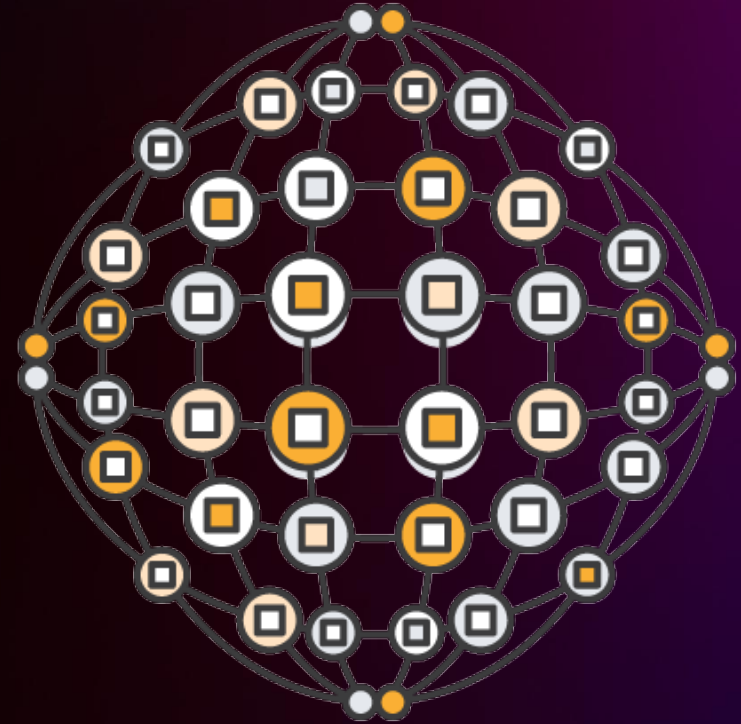
Service
boundaries

Off-by-one
errors

How do I draw service boundaries?

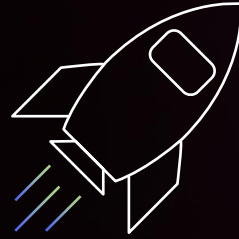


Monolith



Microservices

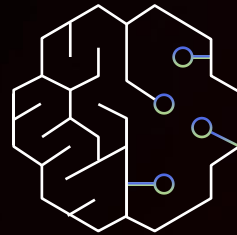
Why AWS Well-Architected Framework?



Build and deploy faster



Lower or mitigate risks

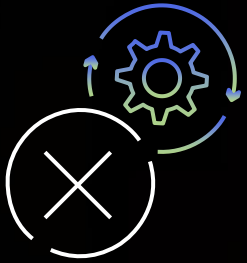


Make informed decisions



Learn AWS best practices

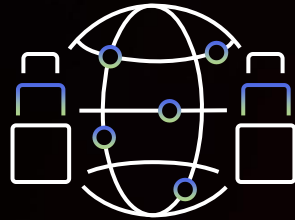
Pillars of AWS Well-Architected



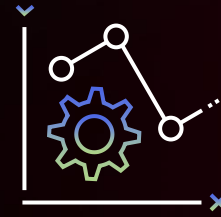
Operational
excellence



Security



Reliability



Performance
efficiency



Cost
optimization



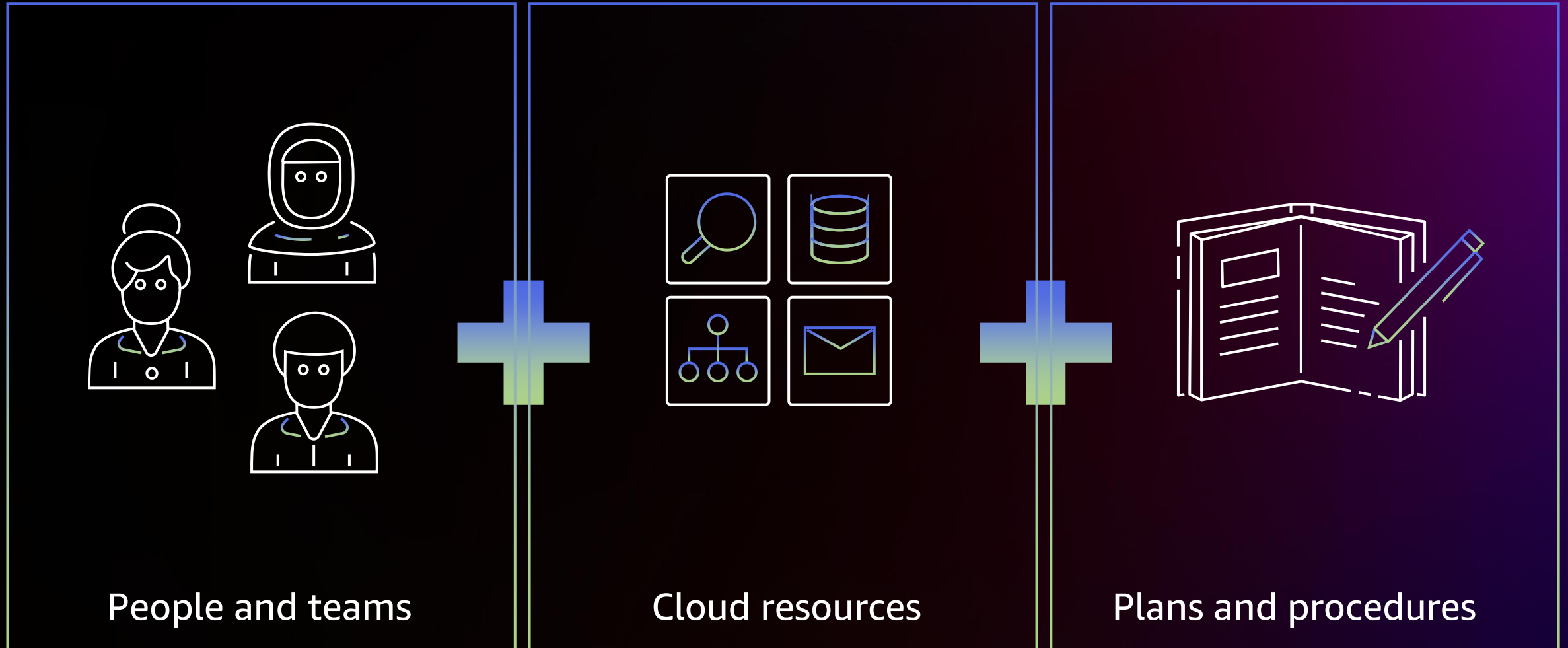
Sustainability

AWS Well-Architected Framework

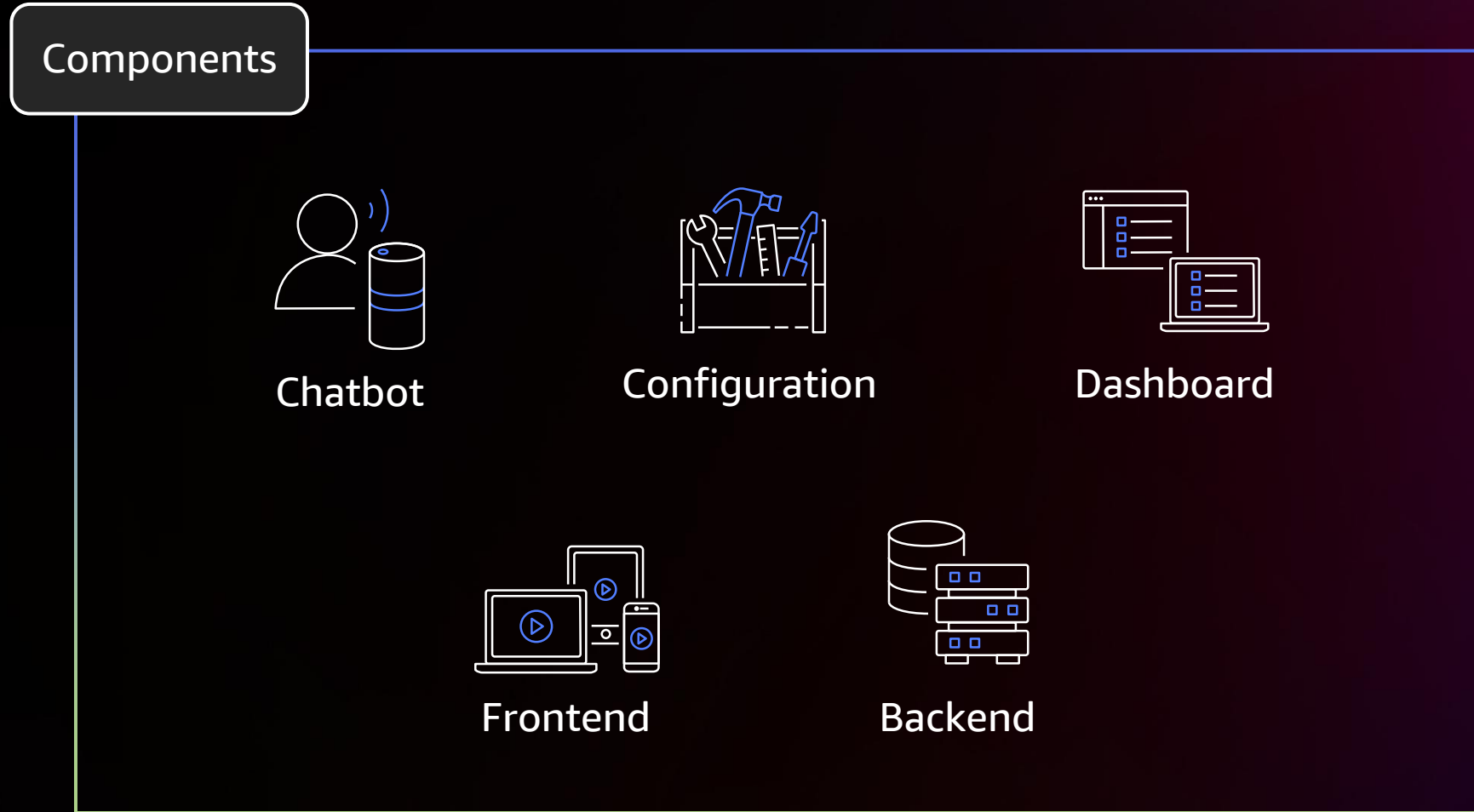


- Component
- Workload
- Architecture
- Technology portfolio

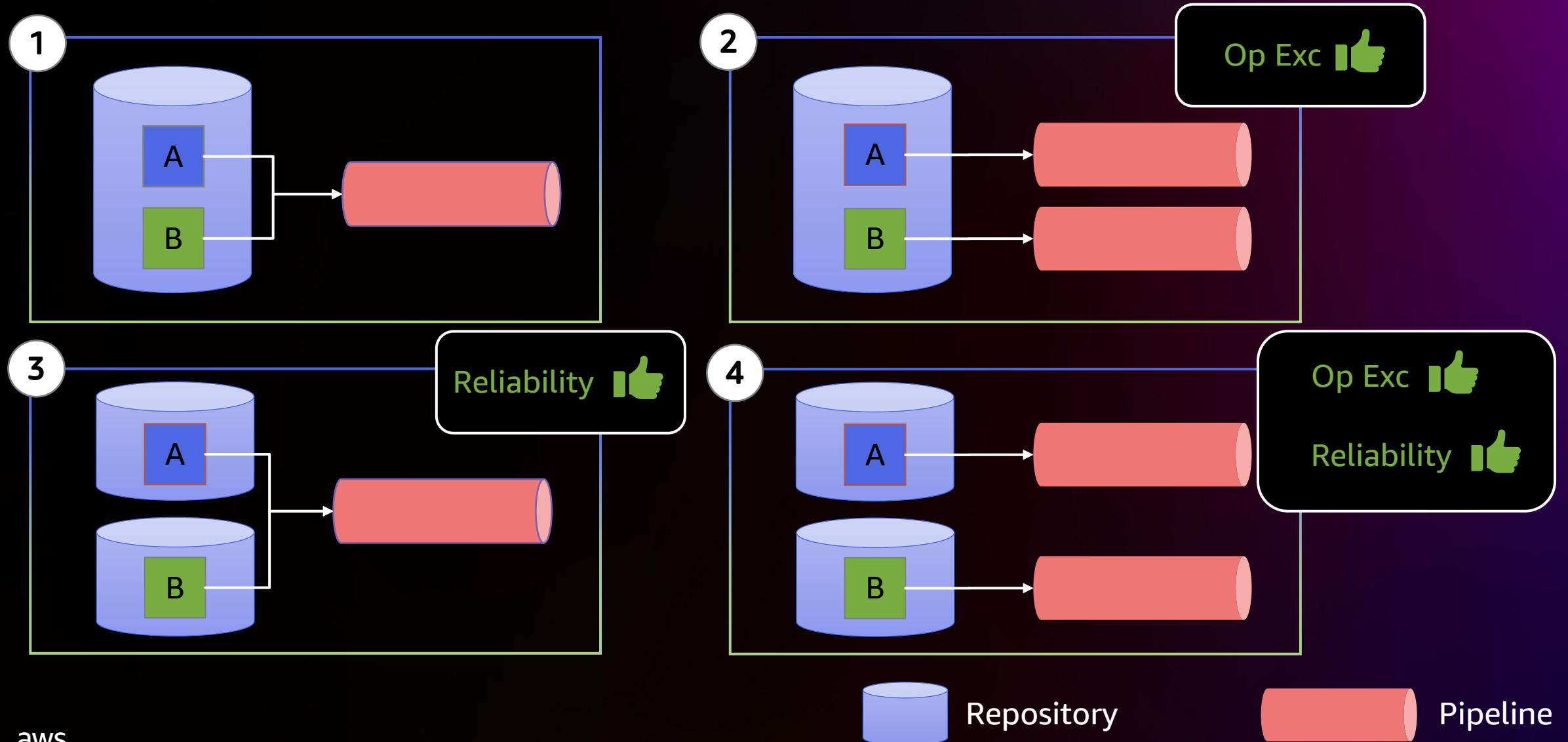
Define a workload



Reference workload – User management



Tradeoffs in component placement



AWS Cloud Development Kit (AWS CDK)

A MULTI-LANGUAGE SOFTWARE DEVELOPMENT FRAMEWORK FOR MODELING CLOUD INFRASTRUCTURE AS REUSABLE COMPONENTS

```
class UrlShortener extends Stack {
  constructor(scope: App, id: string, props?: UrlShortenerProps) {
    super(scope, id, props);

    const vpc = new ec2.Vpc(this, 'vpc', { maxAzs: 2 });
    const cluster = new ecs.Cluster(this, 'cluster', { vpc: vpc });
    const service = new patterns.NetworkLoadBalancedFargateService(this, 'sample-app', {
      cluster,
      taskImageOptions: {
        image: ecs.ContainerImage.fromAsset('ping'),
      },
      domain
    });
    // Setup AutoScaling policy
    const scaling = service.service.autoScaleTask
    scaling.scaleOnCpuUtilization('CpuScaling',
      targetUtilizationPercent: 50,
      scaleInCooldown: Duration.seconds(60),
      scaleOutCooldown: Duration.seconds(60)
    ));
  }
}
```

 **domainName**

 **domainZone**

(property) patterns.NetworkLoadBalancedServiceBaseProps.domainName?: string | undefined

The domain name for the service, e.g. "api.example.com."

@default

- No domain name.



Familiar
Your language
Just code



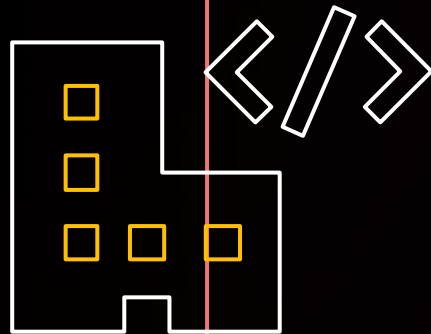
Tool Support
AutoComplete
Inline documentation



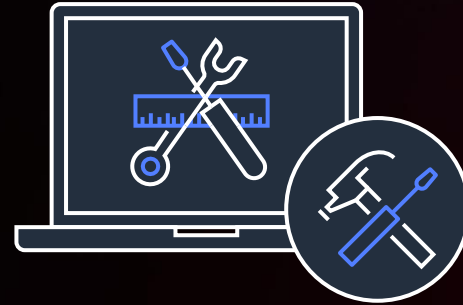
Abstraction
Sane defaults
Reusable classes



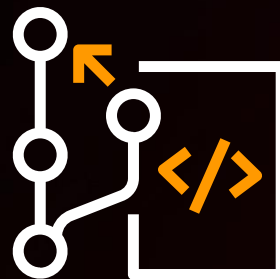
CDK philosophy – Evolution



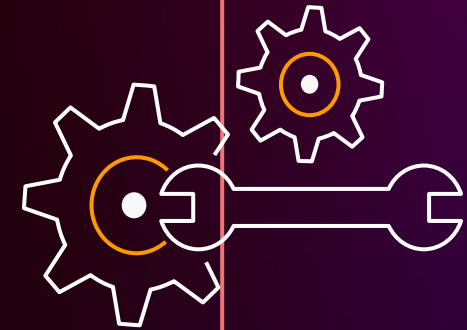
Infrastructure



Runtime code



Source control

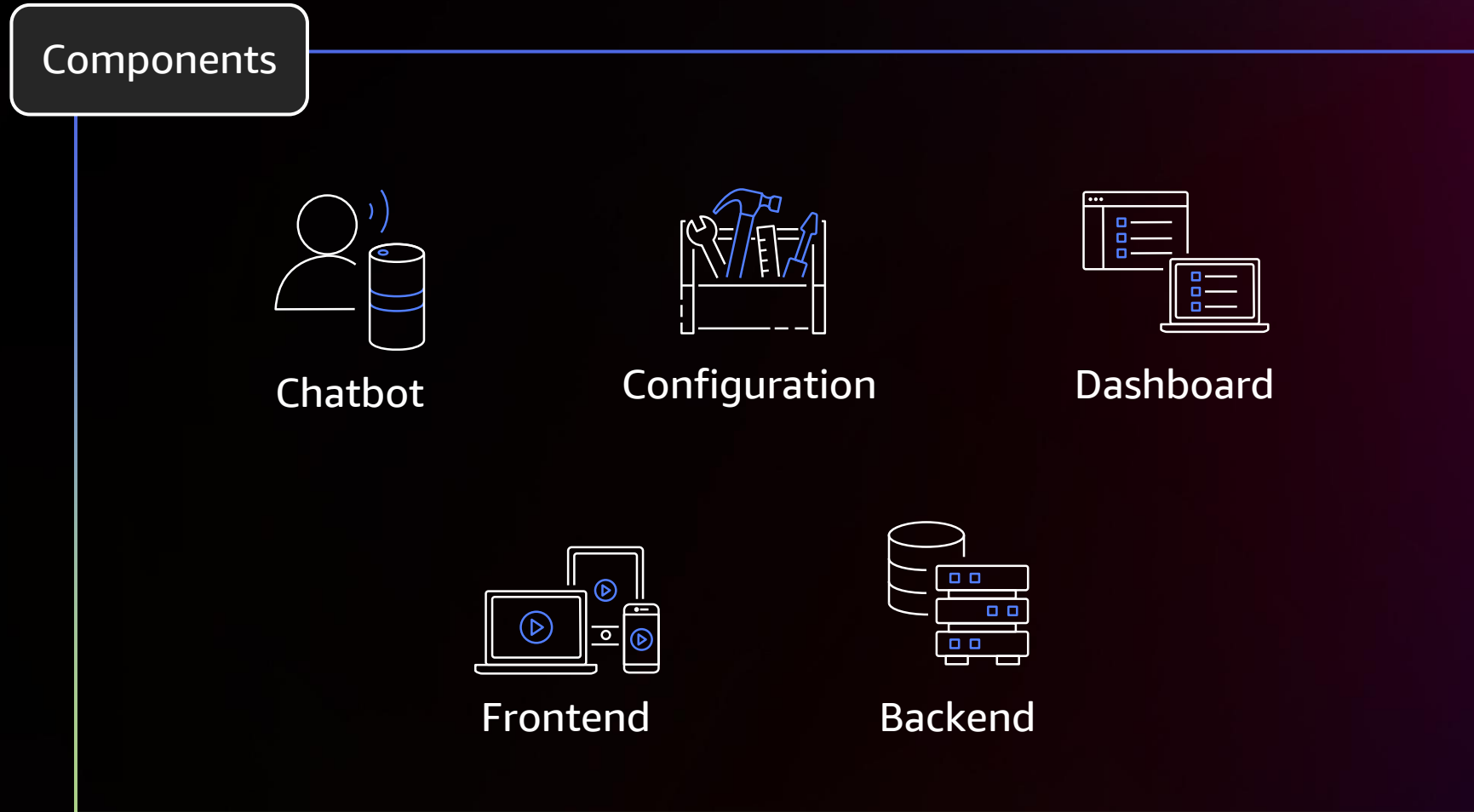


Config and deployment

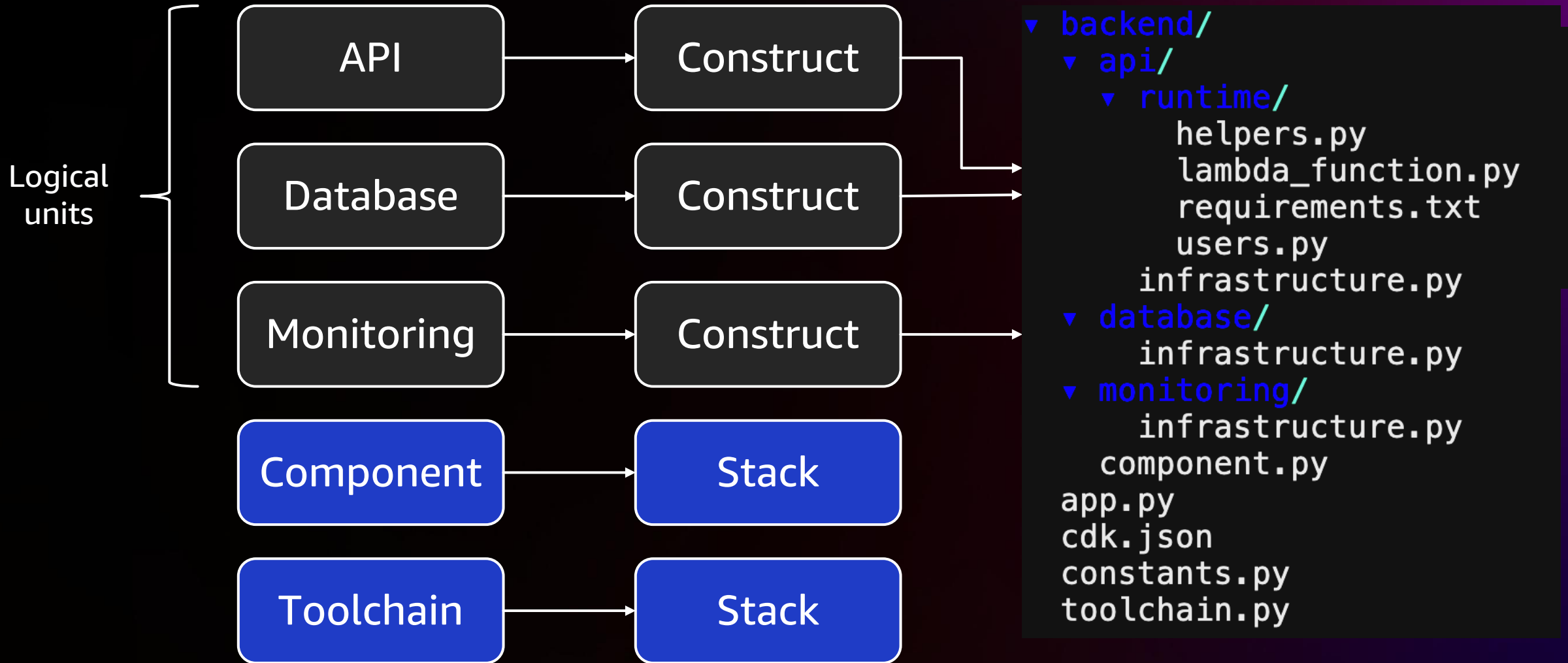
From silos . . .

To a single application

Reference workload – User management



Backend component AWS CDK implementation



AWS CDK tree view in CloudFormation console

UserManagementBackendSandbox

Delete Update Stack actions ▼ Create stack ▼

Stack info Events **Resources** Outputs Parameters Template Change sets

Resources (12) Tree view Flat view ↻

🔍 Search resources ⚙️

Logical ID ▼	Physical ID ▼	Type ▼	Status ▼	Module ▼
[-] Database	-	-	✅ COMPLETE	-
[-] + DynamoDBTable	-	-	✅ COMPLETE	-
[-] API	-	-	✅ COMPLETE	-
[-] + LambdaFunction	-	-	✅ COMPLETE	-
[-] APIGatewayHTTPAPI	-	-	✅ COMPLETE	-
APIAPIGatewayHTTPAPIFE BA3B54	bsc8sagold 🔗	AWS::ApiGatewayV2::Api	✅ UPDATE_COMPLETE	-
[-] + DefaultRoute	-	-	✅ COMPLETE	-
[-] DefaultStage	-	-	✅ COMPLETE	-
APIAPIGatewayHTTPAP IDefaultStage4E0155A 6	\$default	AWS::ApiGatewayV2::Stage	✅ UPDATE_COMPLETE	-
[-] Monitoring	-	-	✅ COMPLETE	-
[-] + CloudWatchDashboard	-	-	✅ COMPLETE	-
+ CDKMetadata	-	-	✅ COMPLETE	-

Code walkthrough



Thank you!

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