
AWS
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ENT402

The cutover: Moving your traffic to the cloud

Tino Tran

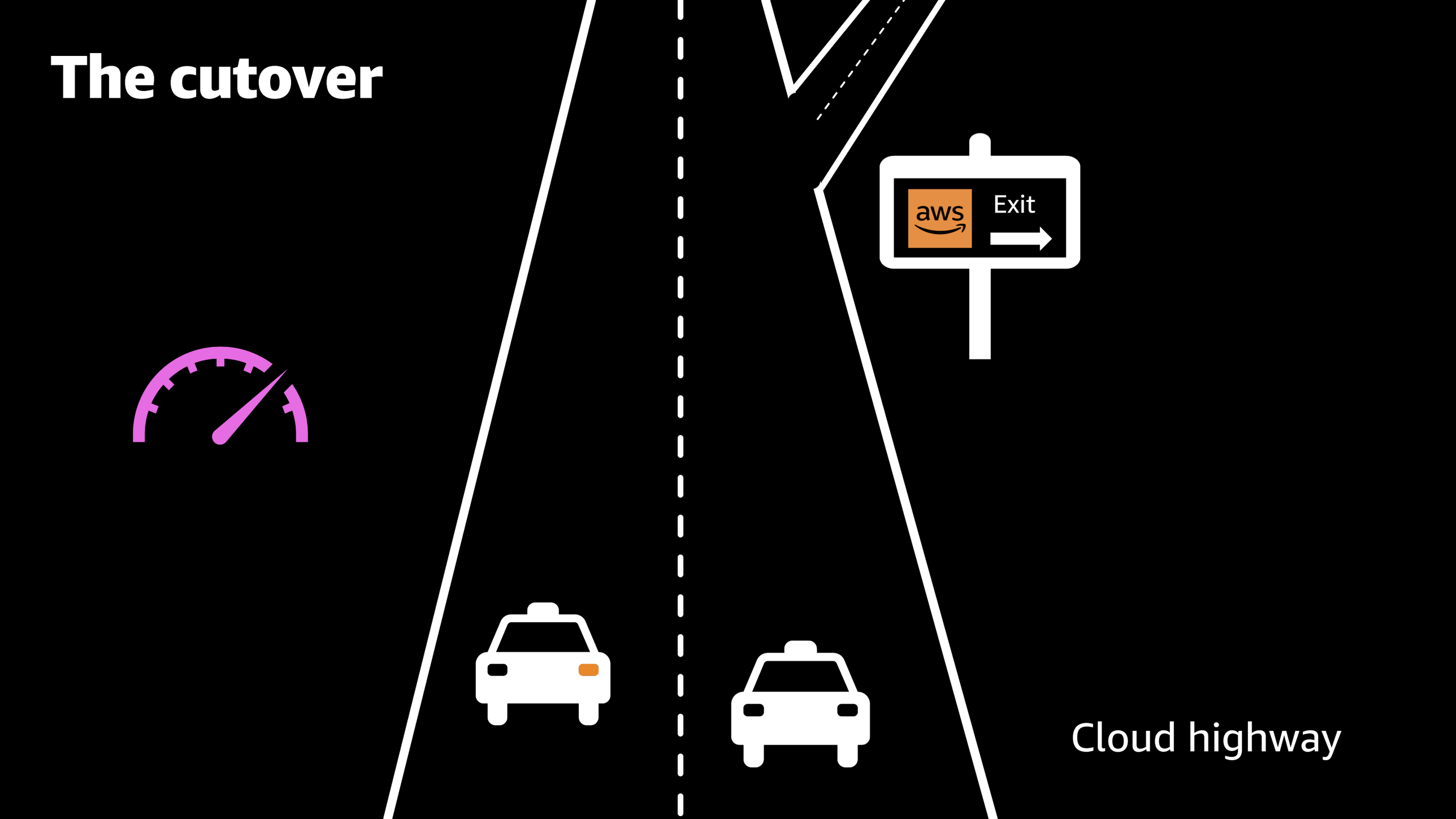
Principal SA, Migrations

AWS

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The cutover



What could go wrong?



HTTP 500 — Unplanned outage

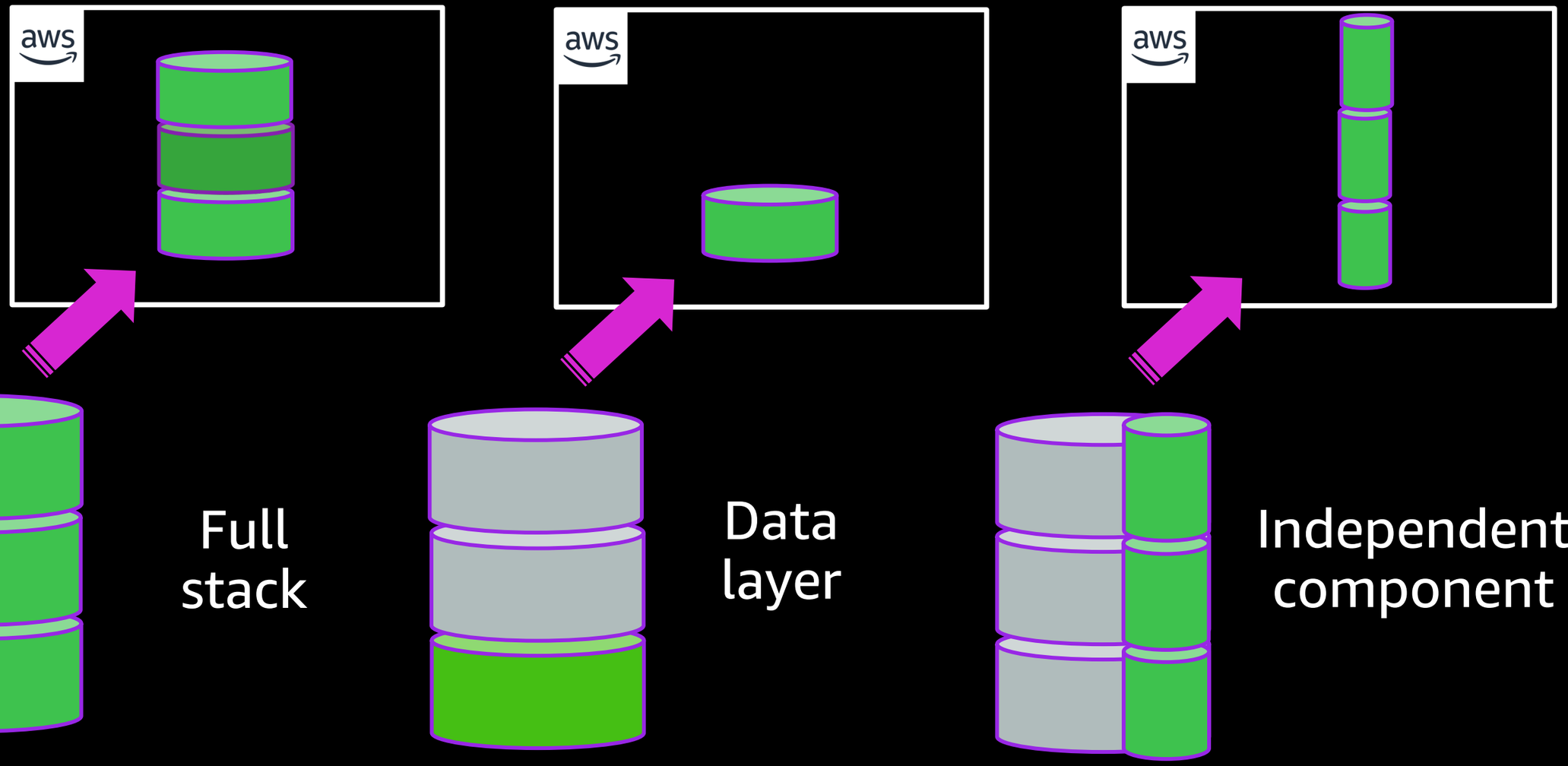
HTTP 404 — Loss of data

HTTP 503 — Missed scaling expectations



Poor user experience

Application cutovers



Preparation is critical

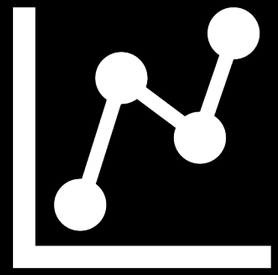


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Operational readiness review



Checklist



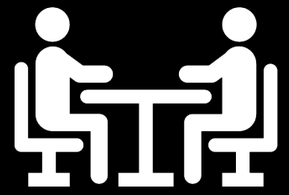
Dashboards



Run books



Date / time

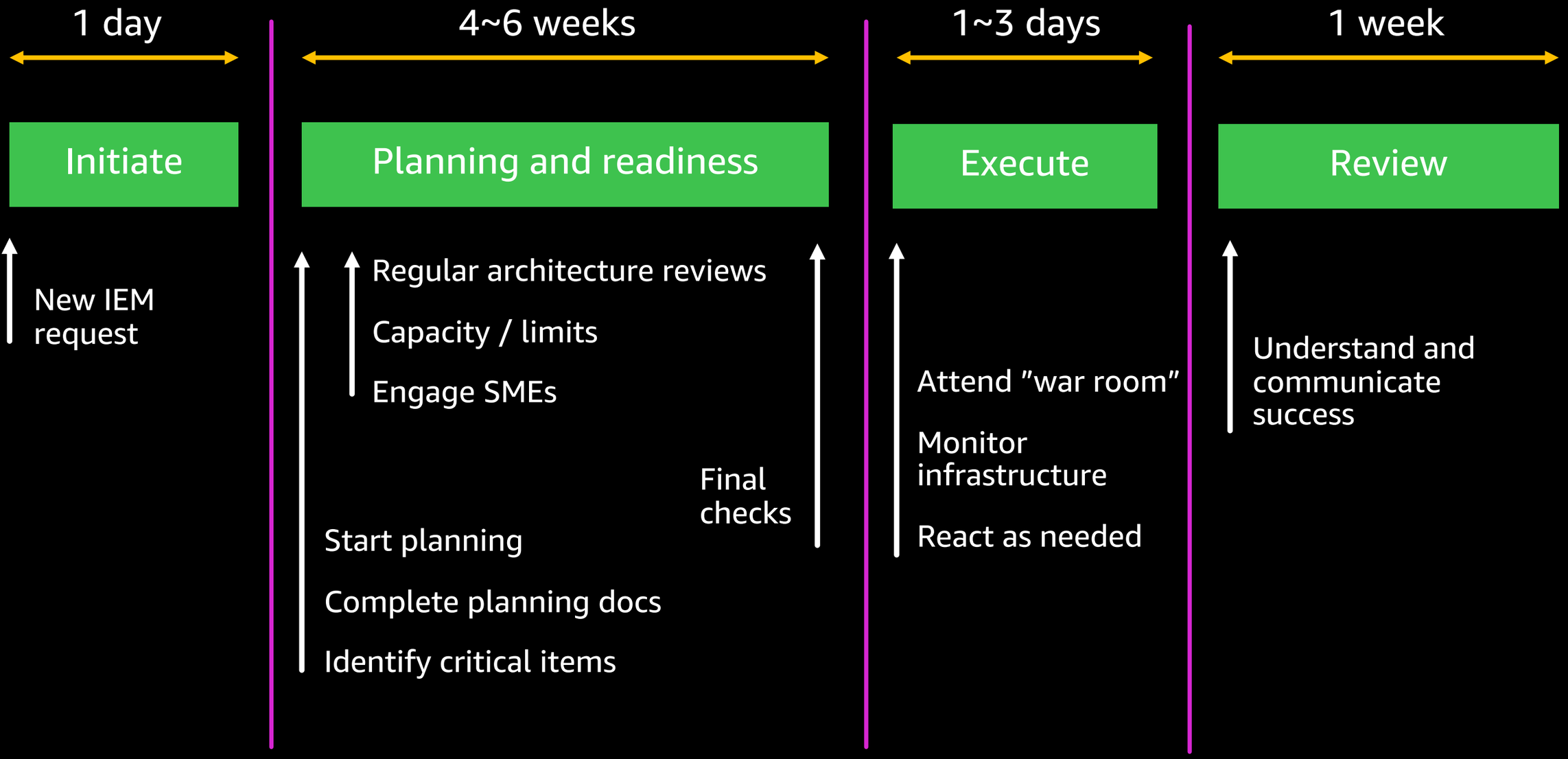


Stakeholders



AWS Support

Infrastructure Event Management



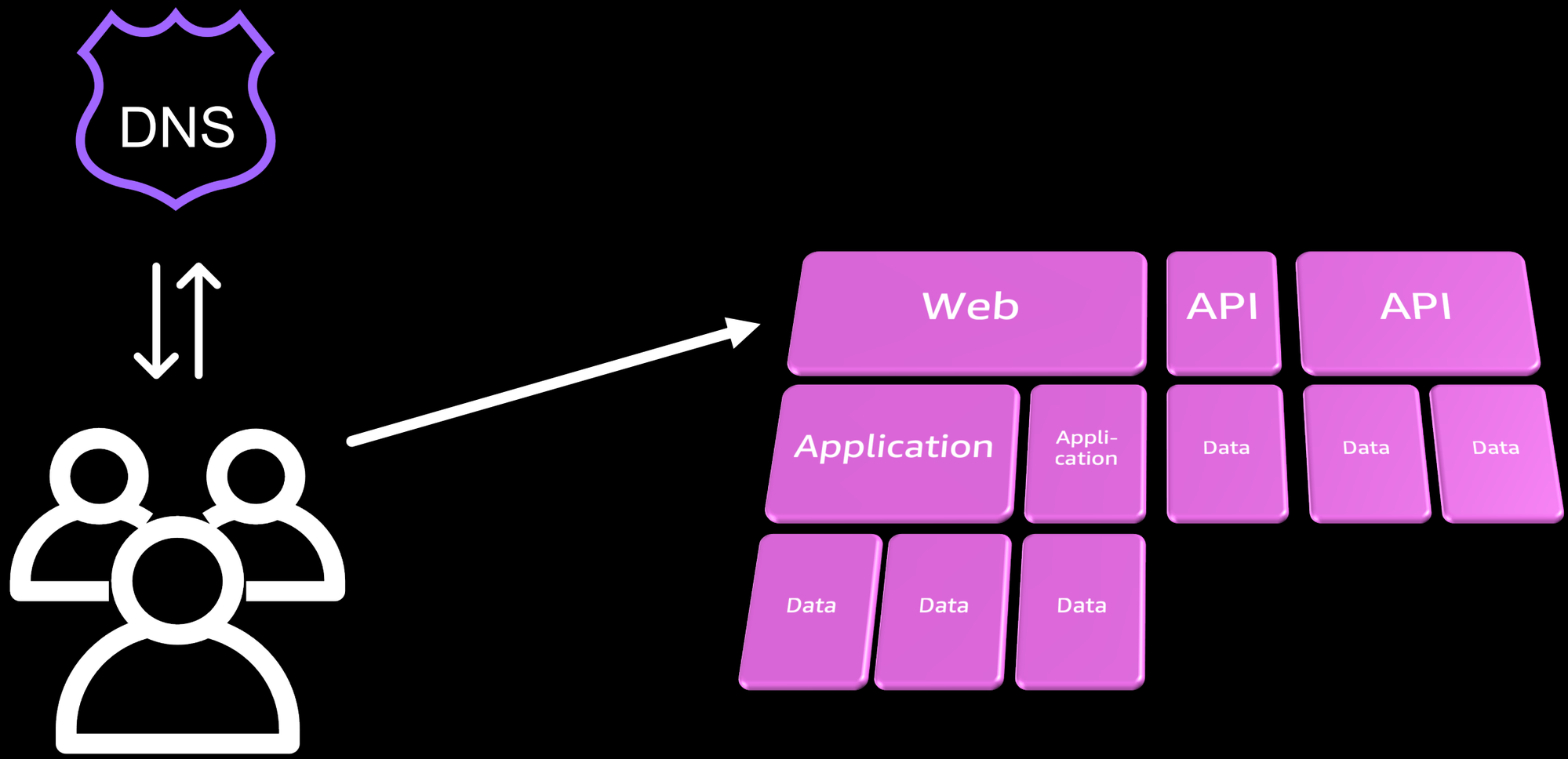
The cutover: Moving your traffic



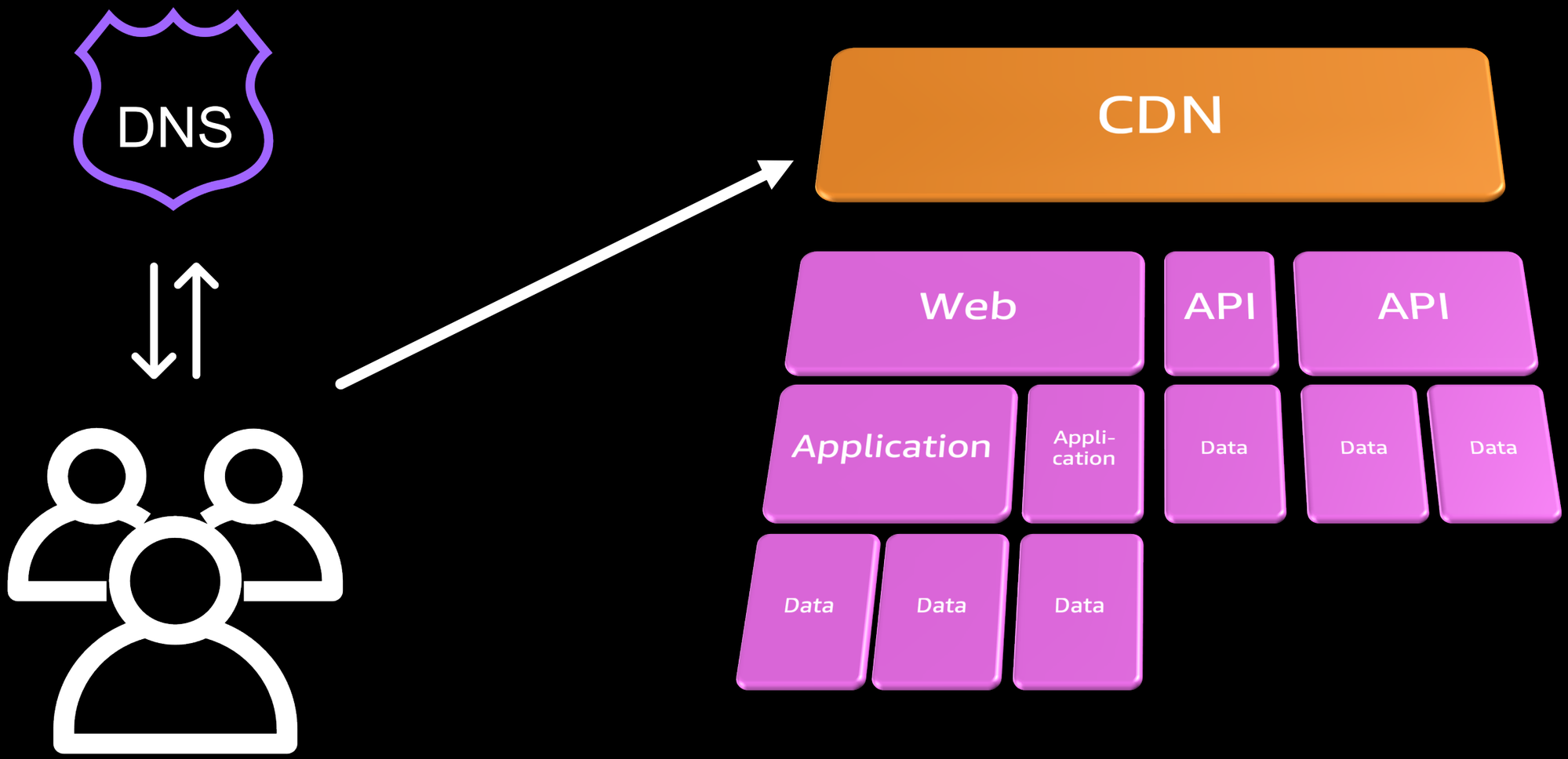
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Web application stack

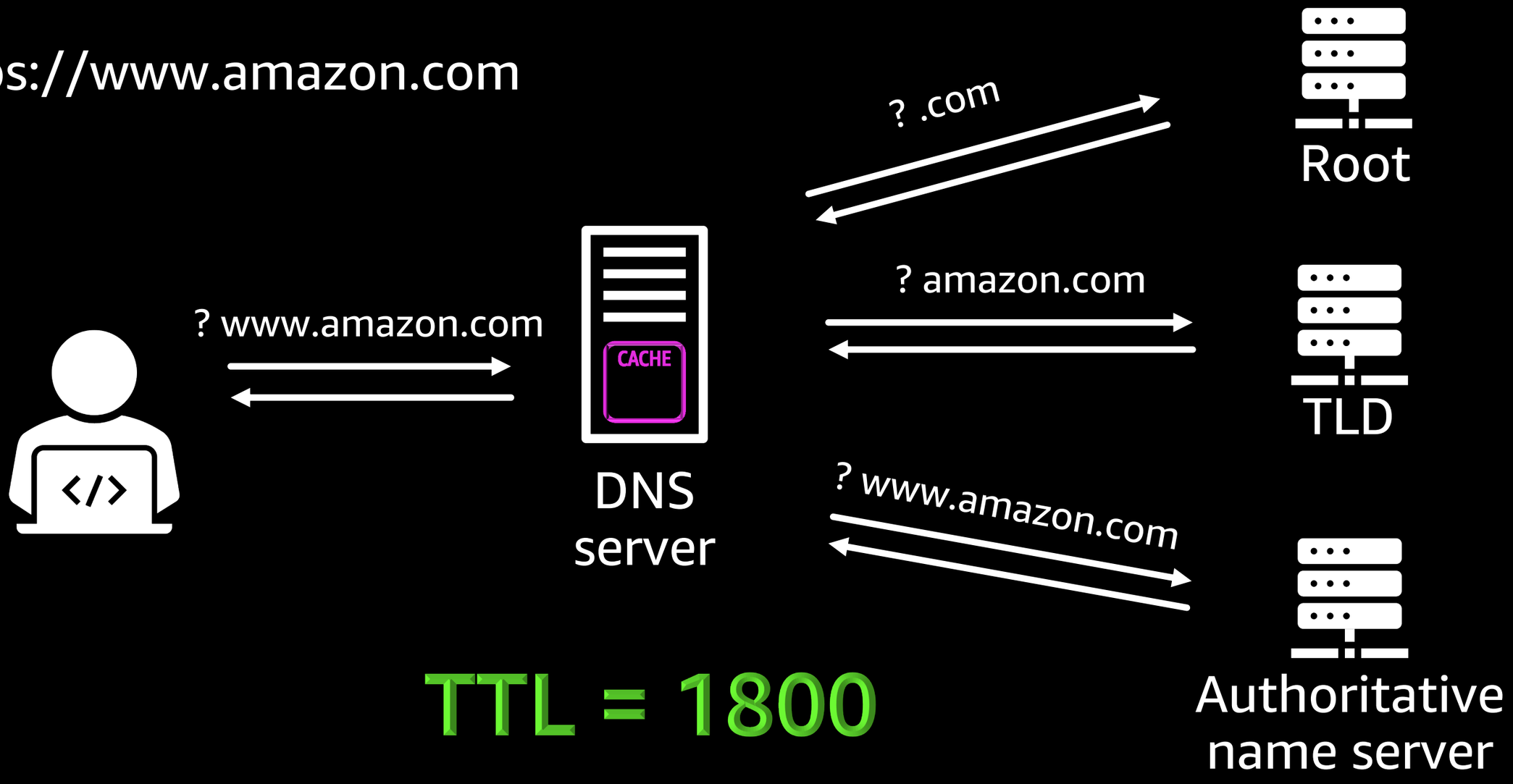


Web application stack



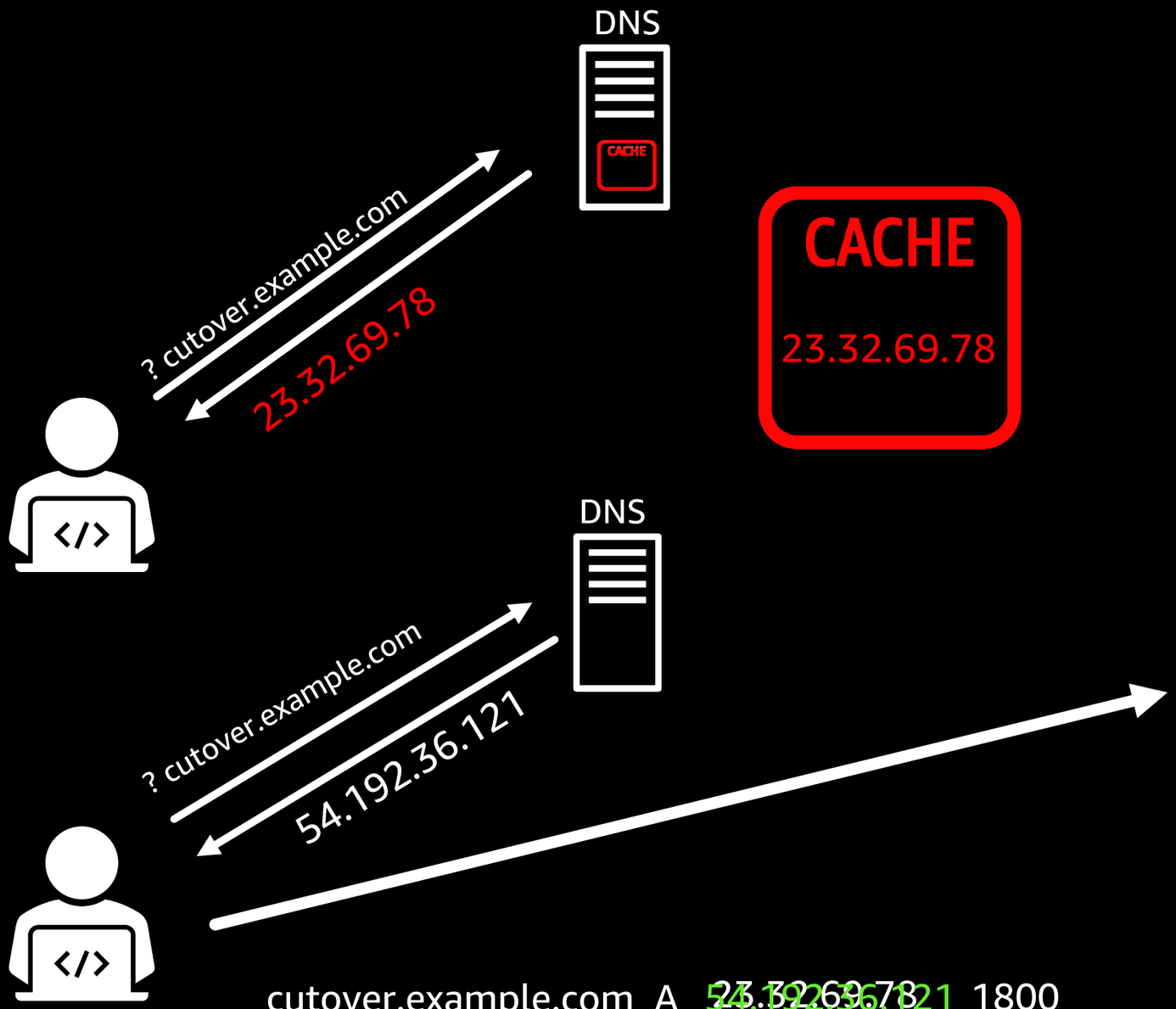
DNS

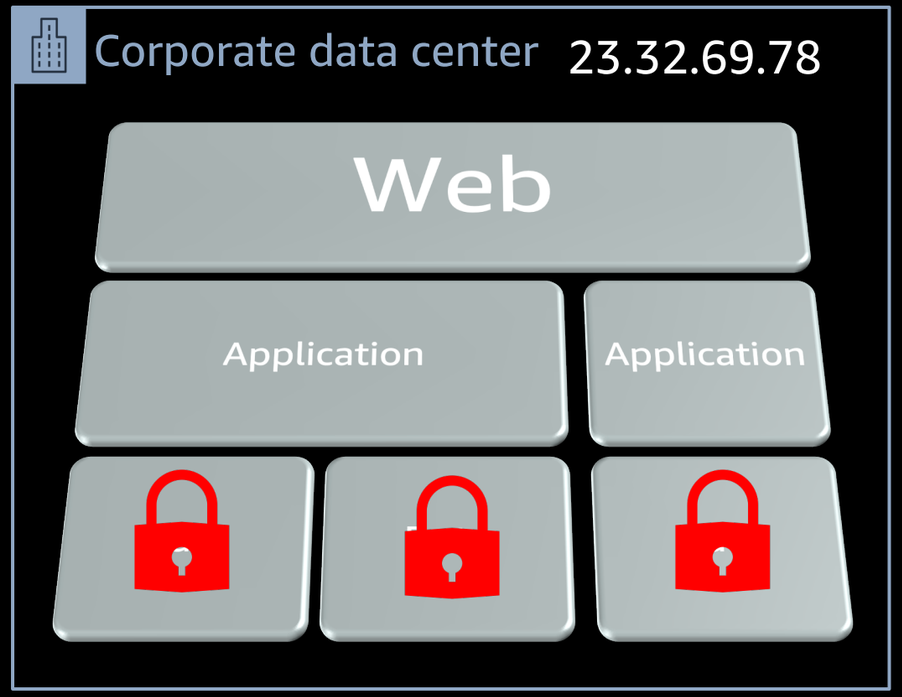
https://www.amazon.com

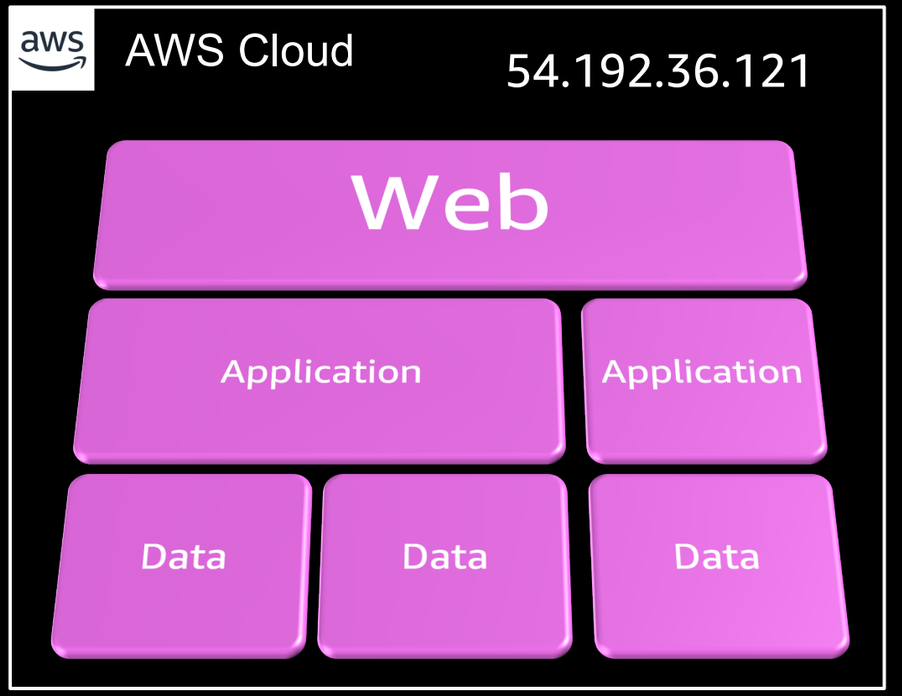


TTL = 1800

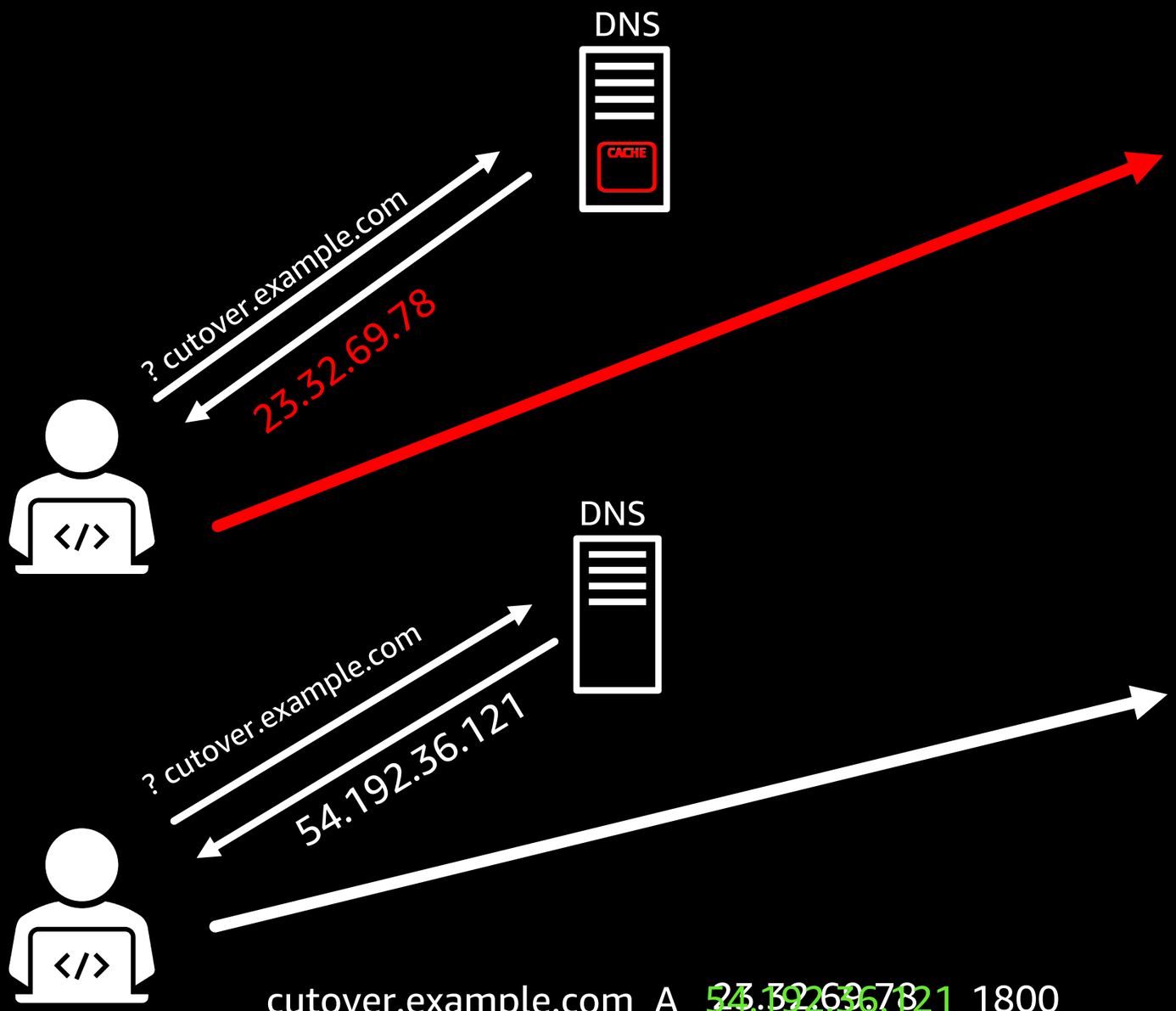
Cutover with DNS

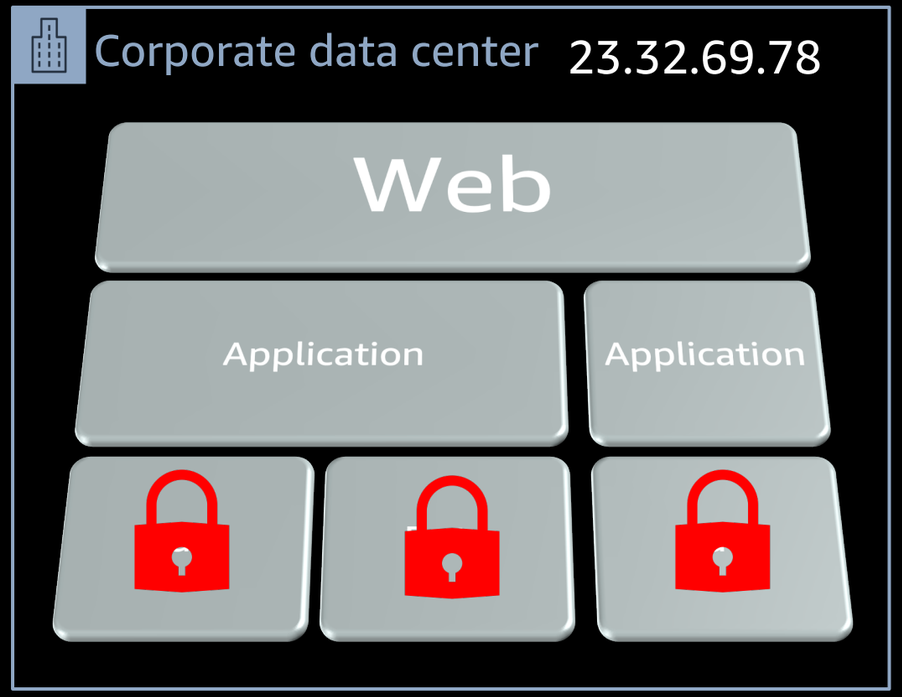


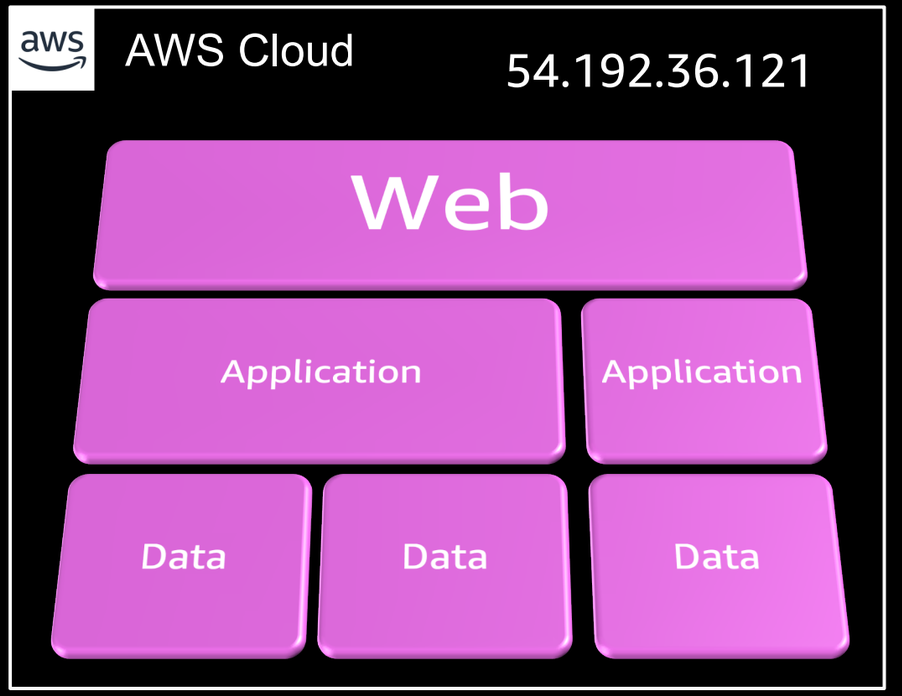




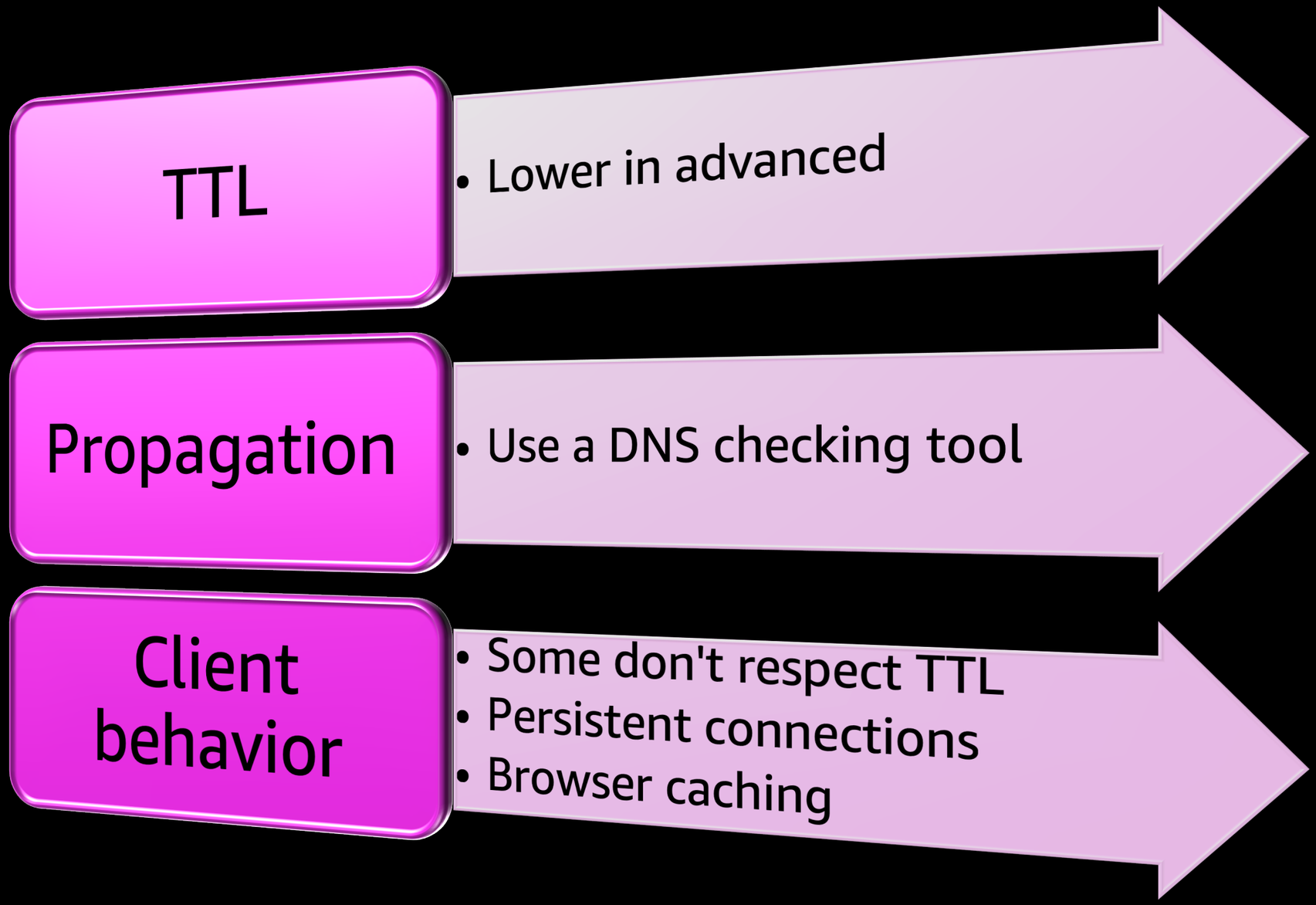
Cutover with DNS



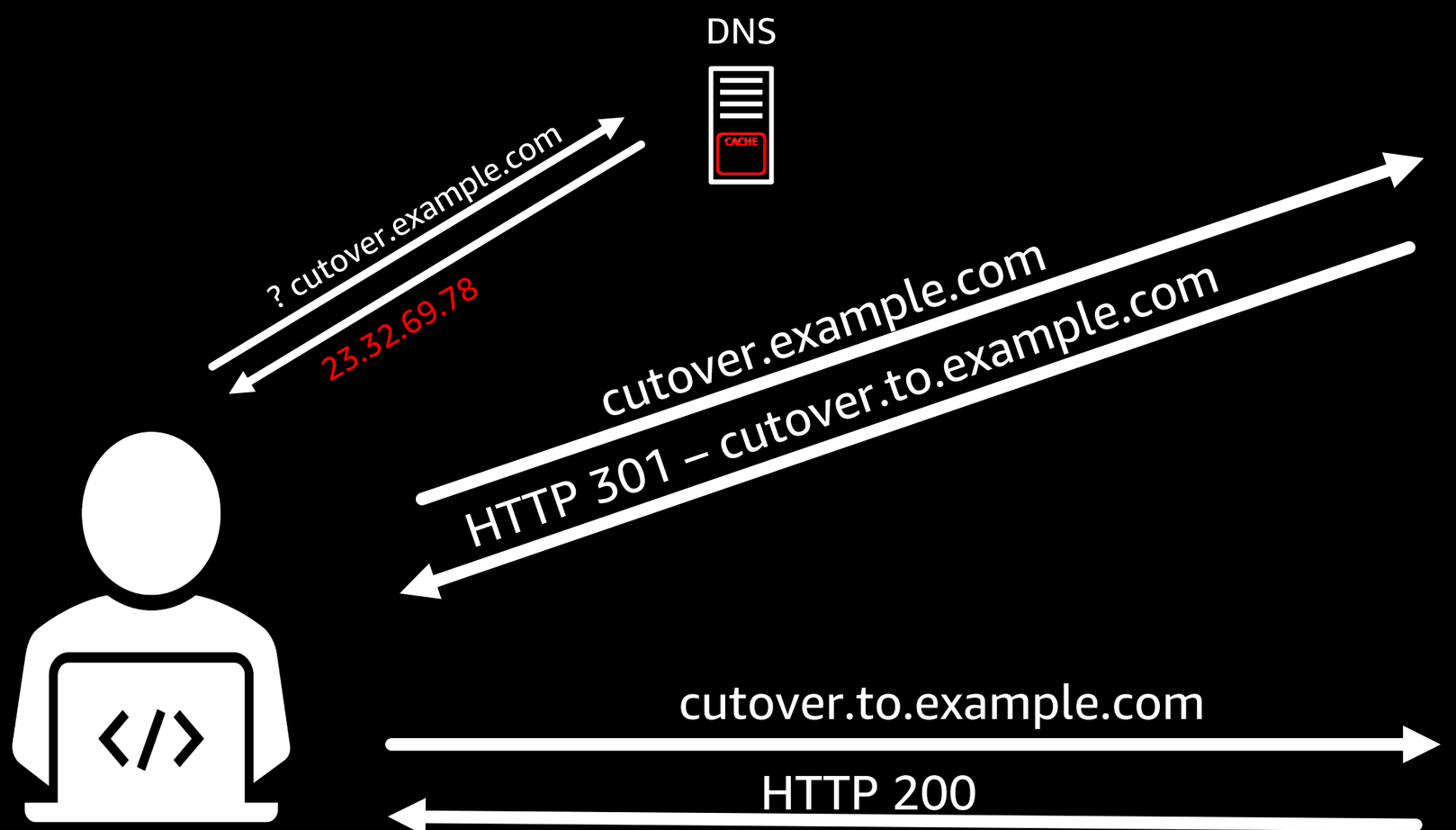


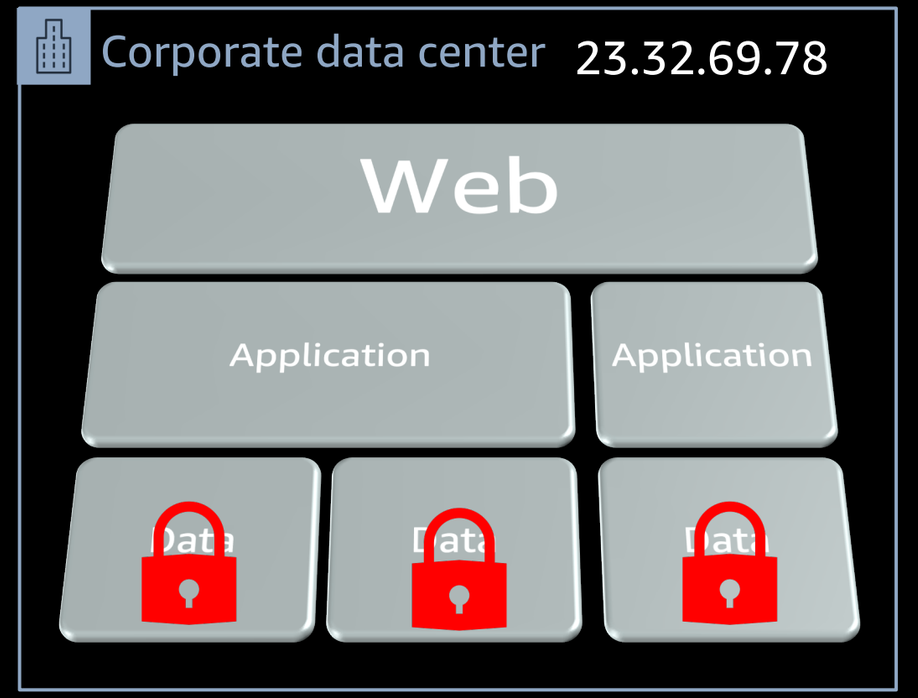


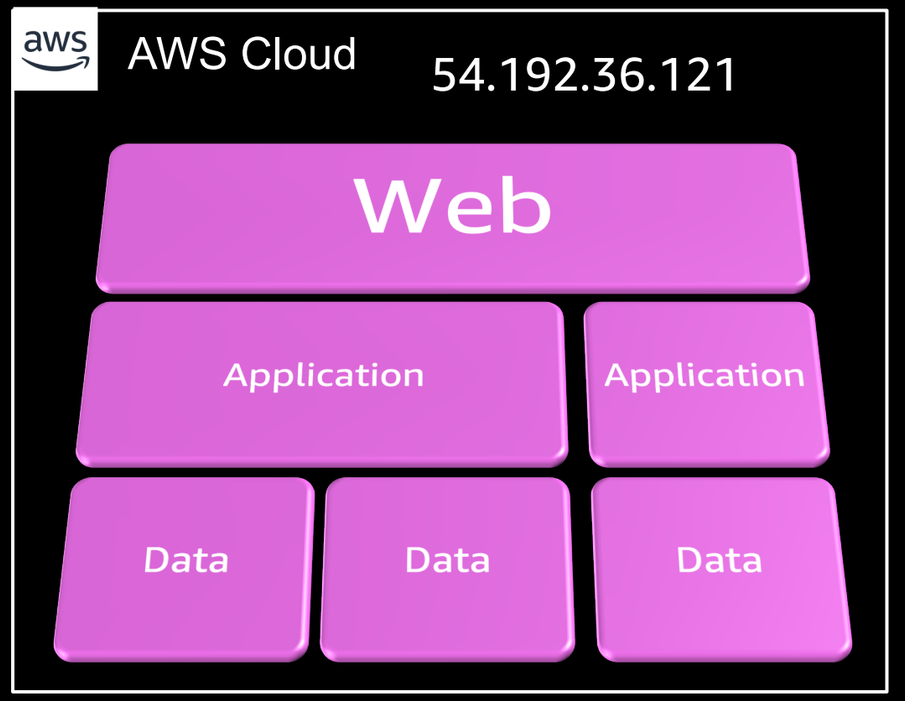
Cutover with DNS



Mitigate DNS propagation lag

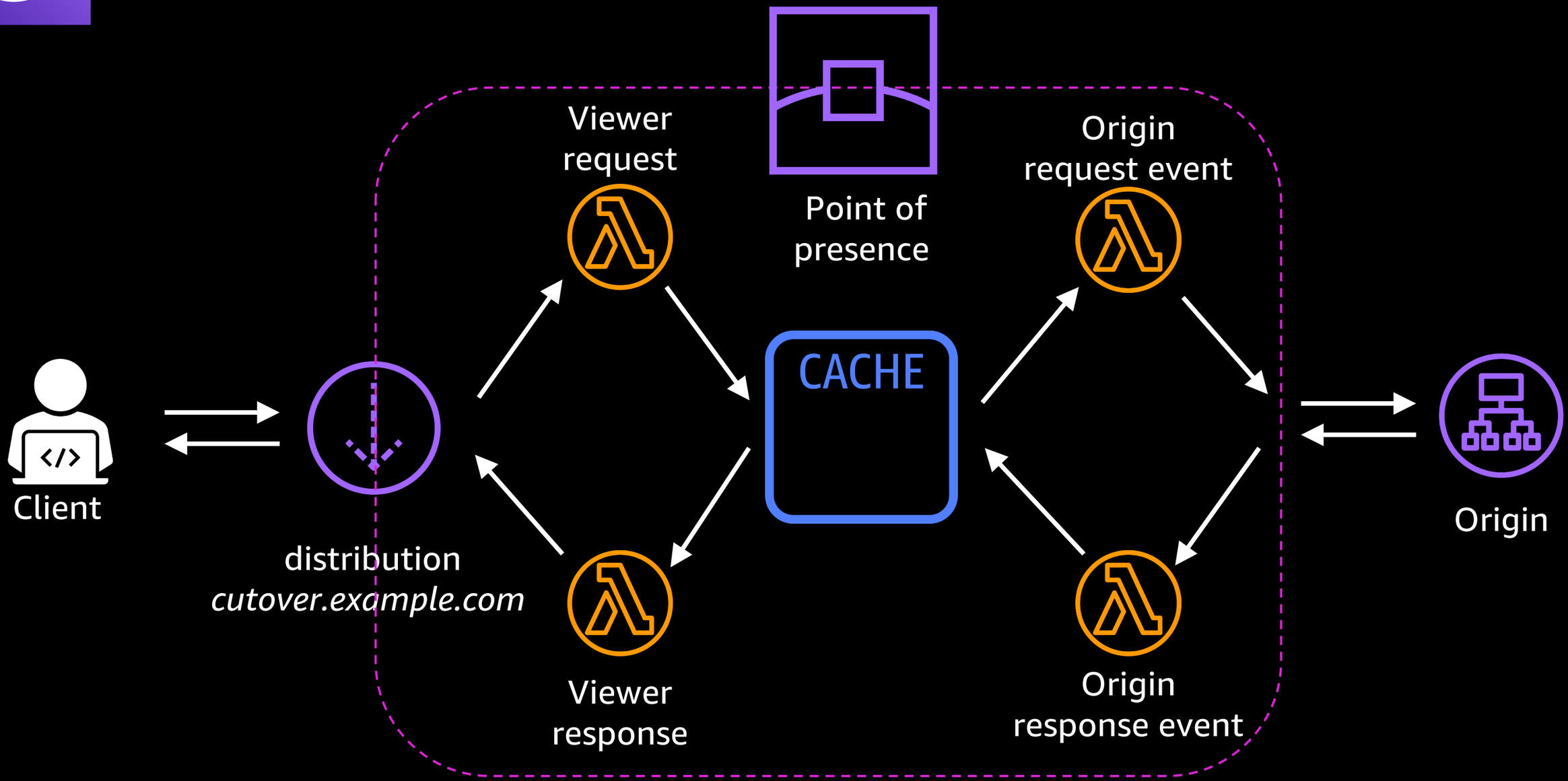




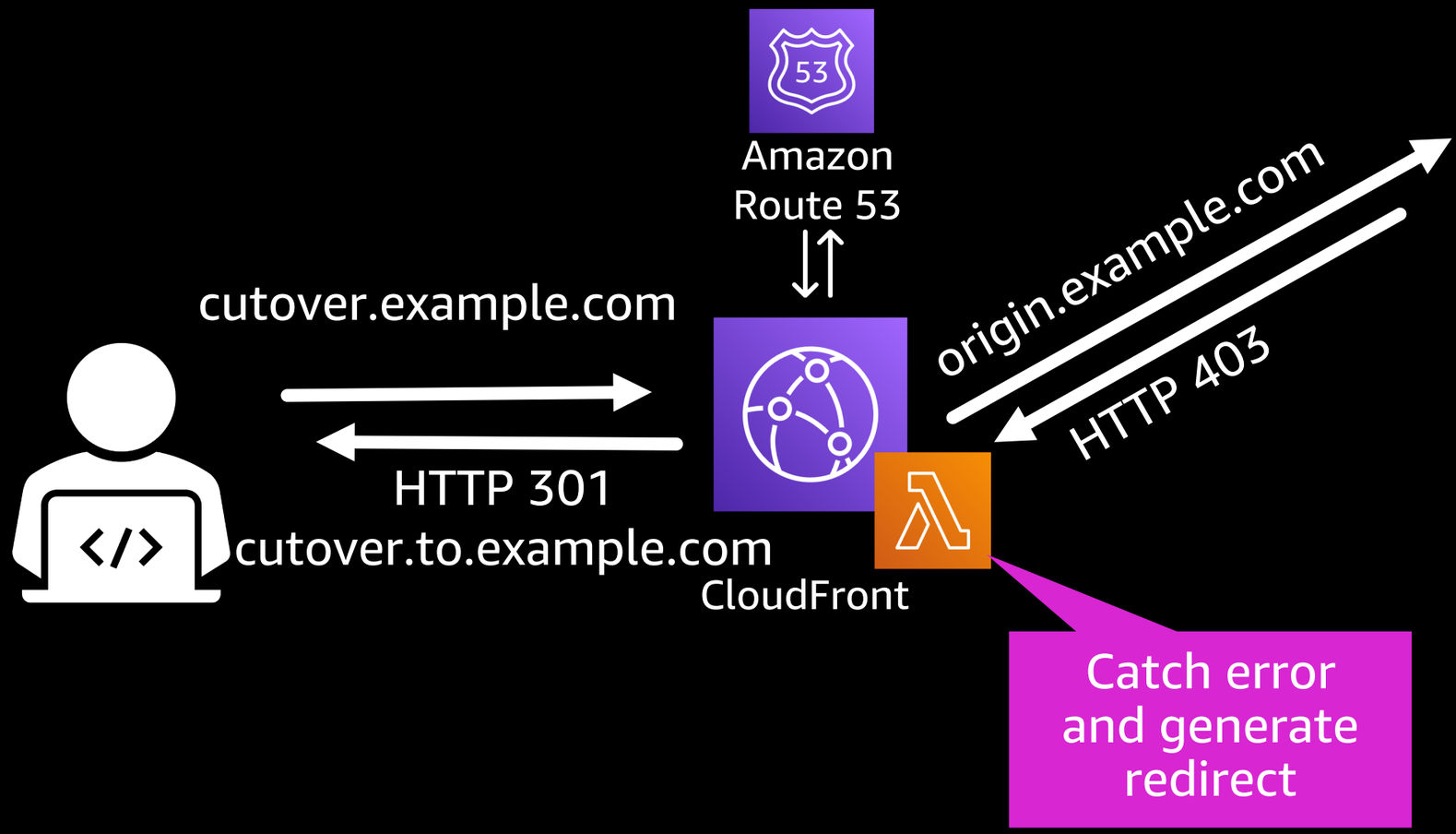


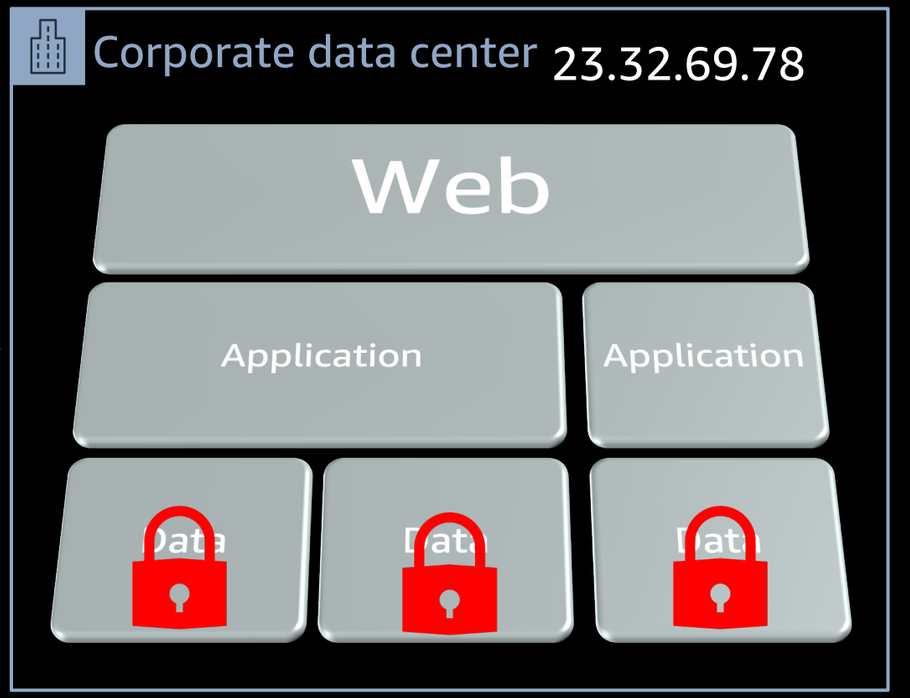
cutover.example.com A 54.192.36.121 60
cutover.to.example.com A 54.192.36.121 60

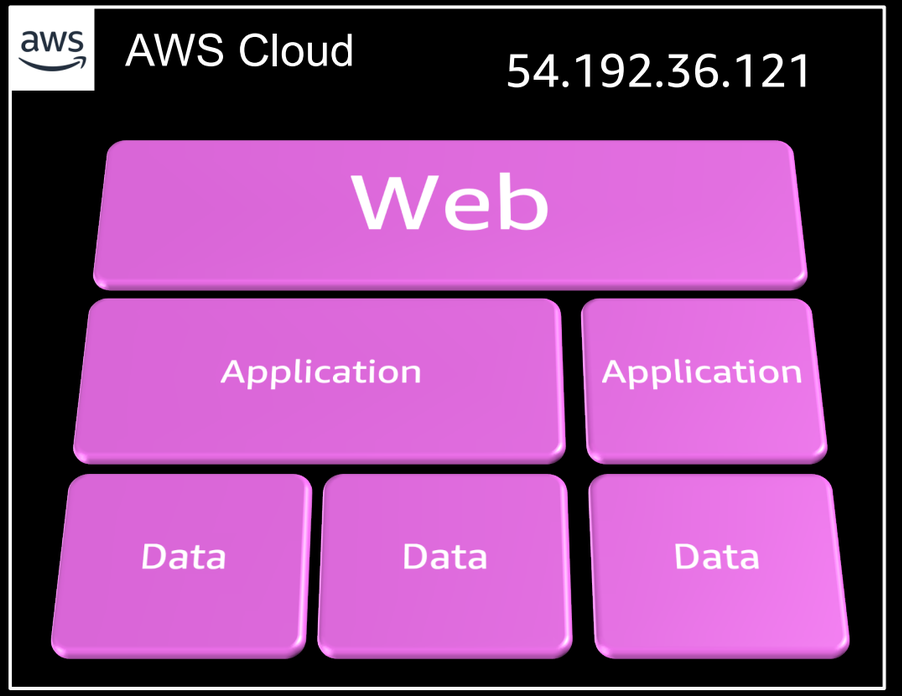
Amazon CloudFront



Redirection with CloudFront

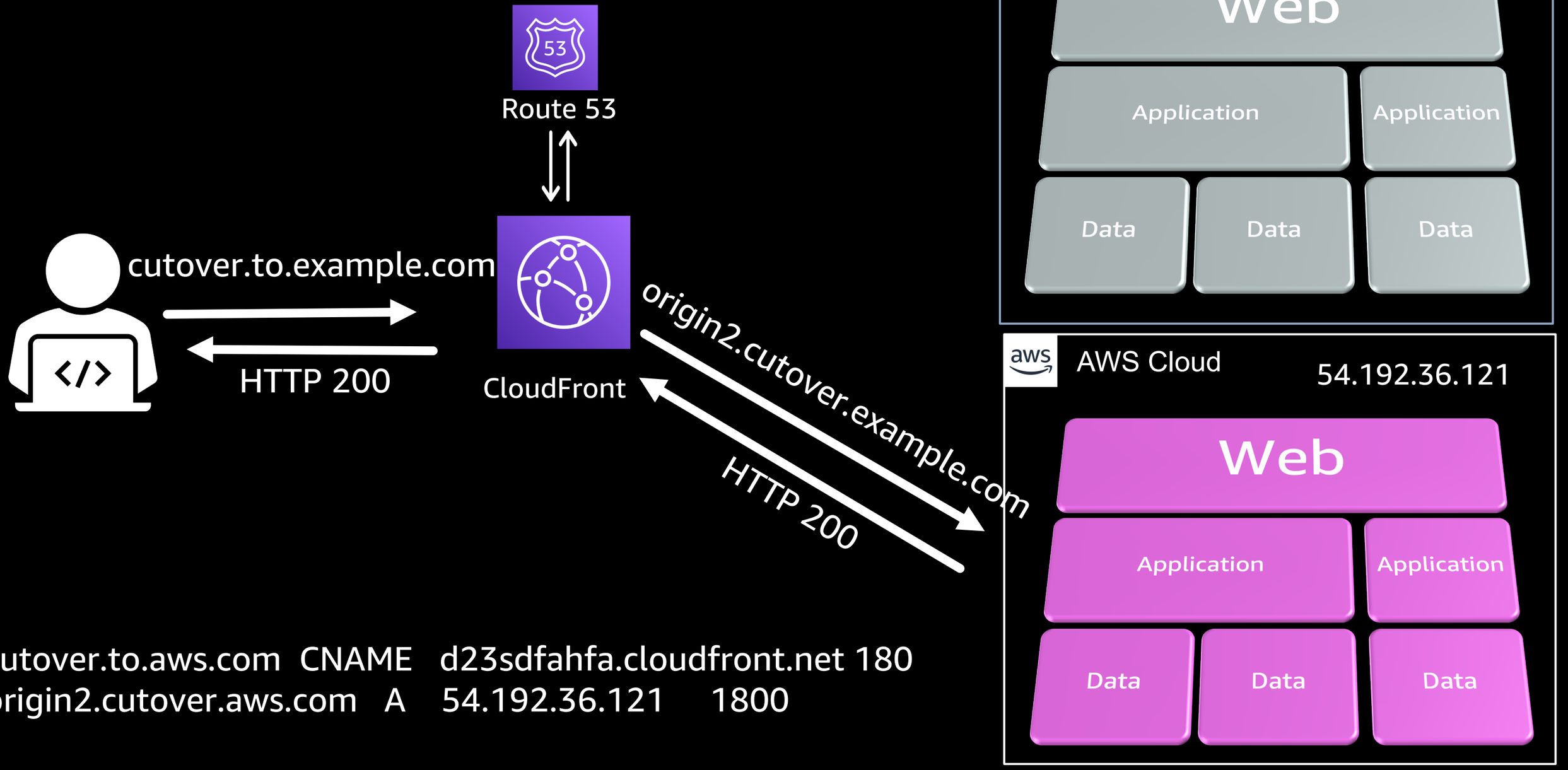






cutover.example.com CNAME d1lakdjfa36.cloudfront.net 180
origin.example.com A 54.192.36.121 60

Redirection with CloudFront



cutover.to.aws.com CNAME d23sdfahfa.cloudfront.net 180
origin2.cutover.aws.com A 54.192.36.121 1800

CloudFront Lambda@Edge code

```
exports.handler = async (event, context) => {
    const response = event.Records[0].cf.response;

    if(response.status == 403){
       /* Generate HTTP redirect response with 301 status code and Location header.*/
       const newResponse = {
         status: ‘301',
         statusDescription: 'Found',
         headers: {
             location: [{
                 key: 'Location',
                 value: 'http://cutover.to.aws.com/',
             }],
         }
      };
      callback(null, newResponse);
    }

  callback (null, response);
};
```

CloudFront Lambda@

```
exports.handler = async (event, context)
    const response = event.Reco

    if(response.status == 403){
       /* Generate HTTP redirect resp
       const newResponse = {
         status: '301',
         statusDescription: 'Found',
         headers: {
             location: [{
                 key: 'Location',
                 value: 'http://cutover.t
             }],
         }
       };
       callback(null, newResponse);
    }

   callback (null, response);
};
```

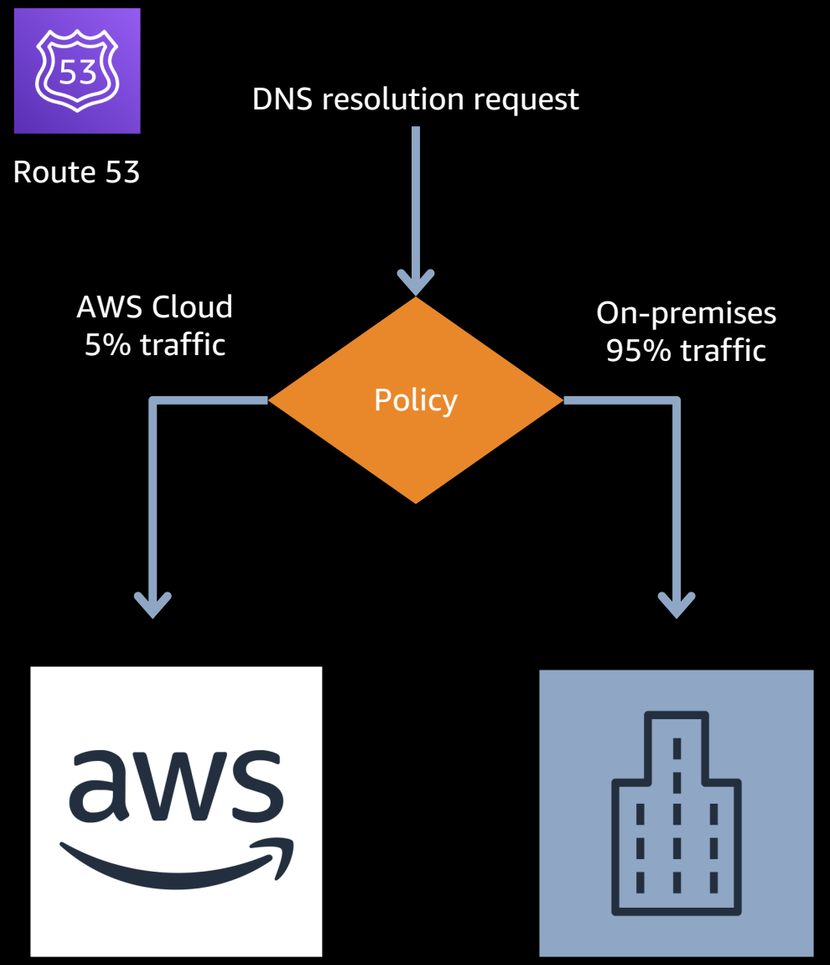
EVENT STRUCTURE:


```
{ "Records": [
   {
    "cf": {
     "config": {
      "distributionDomainName": "d111111abcdef8.cloudfront.net",
      "distributionId": "EDFDVBD6EXAMPLE",
      "eventType": "origin-response",
      "requestId":
"4TyzHTaYWb1GX1qTfsHhEqV6HUDd_BzoBZnwfnvQc_1oF26ClkoUSEQ=="
     },
     "request": { ……},
     "response": {
      "headers": {
       "content-type": [
        {
         "key": "Content-Type",
         "value": "text/html; charset=utf-8"
        }
       ],
       "content-length": [
        {
         "key": "Content-Length",
         "value": "9593"
        }
       ]
      },
      "status": "403",
      "statusDescription": "Forbidden"
     }
    }
   }
 ]}
```

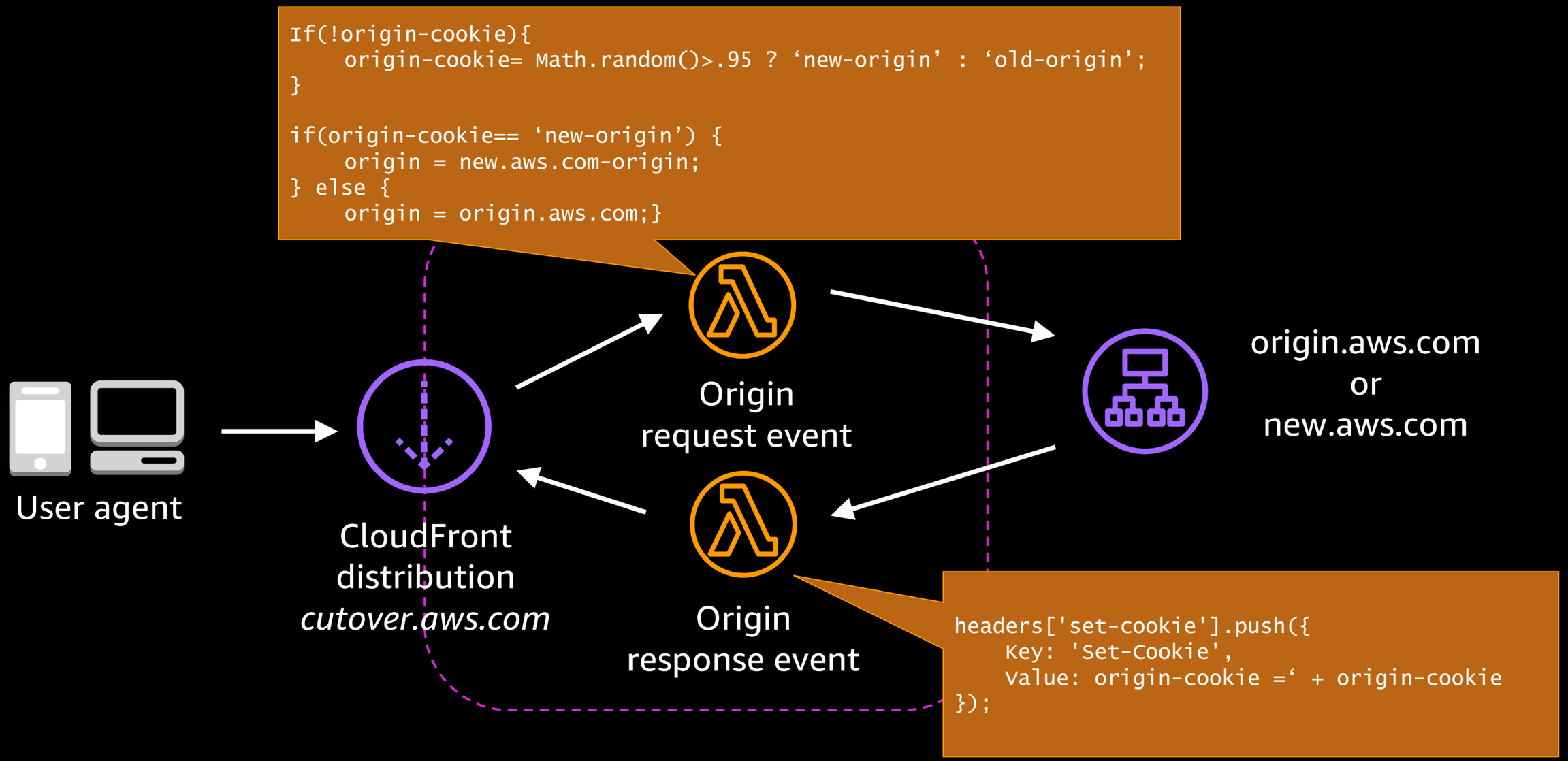
Gradual cutover with Route 53

- AWS DNS service
- Domain registration
- Domain name resolution
- 100% availability SLA
- Latency-based routing
- Geo-based routing
- Geo proximity routing
- Weighted round robin

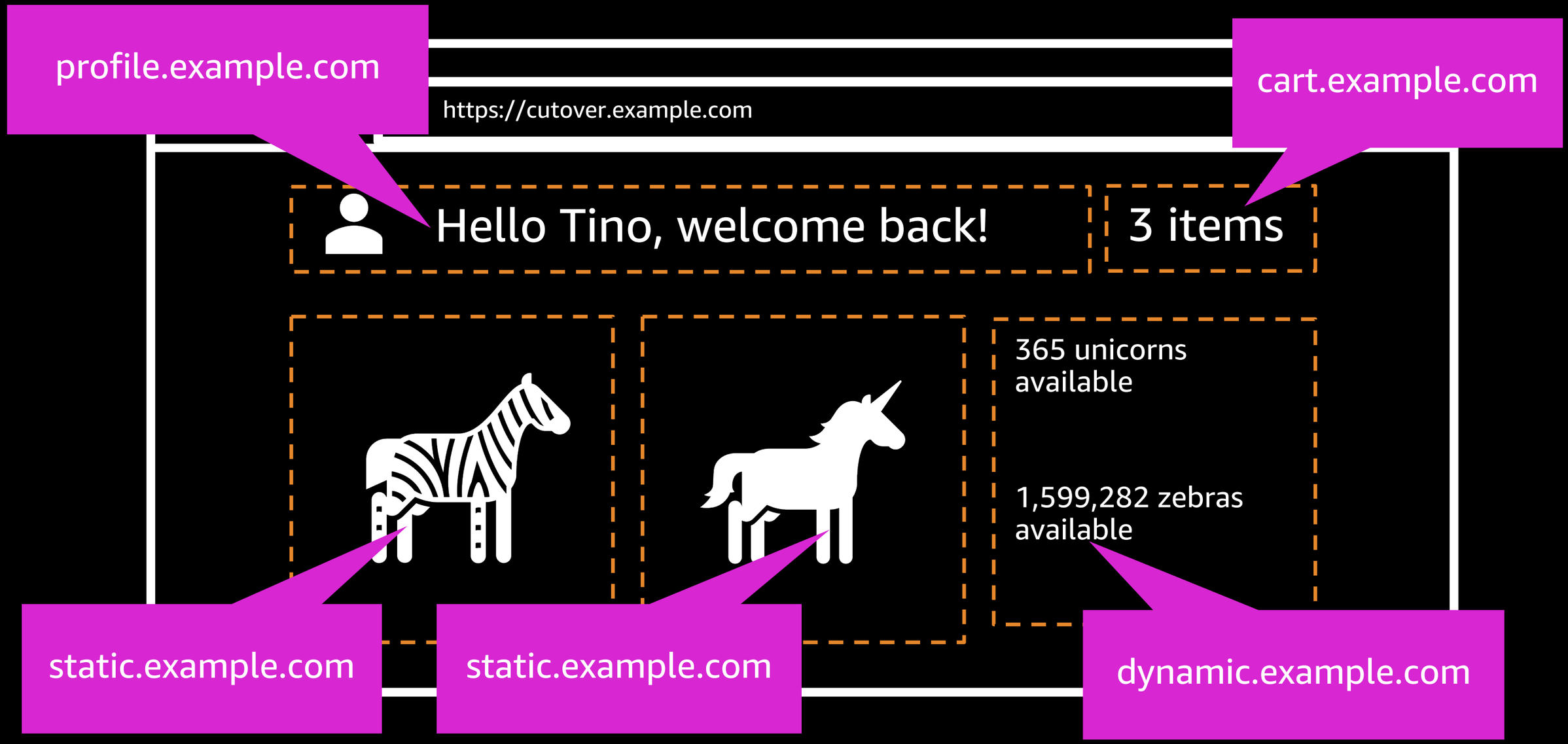
Does NOT consider state



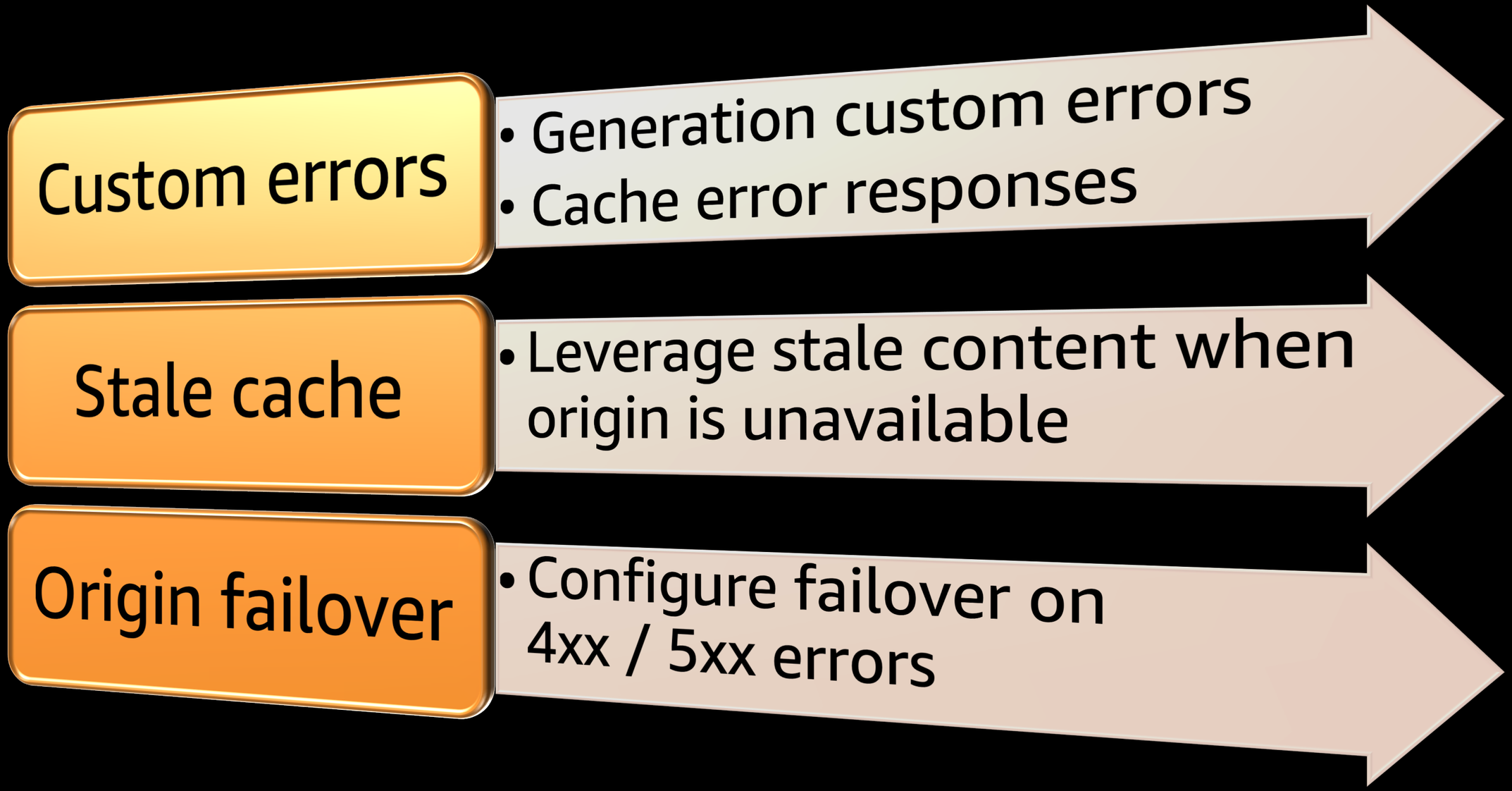
Gradual cutover for stateful applications



Cutover independent components



Graceful degradation with CloudFront



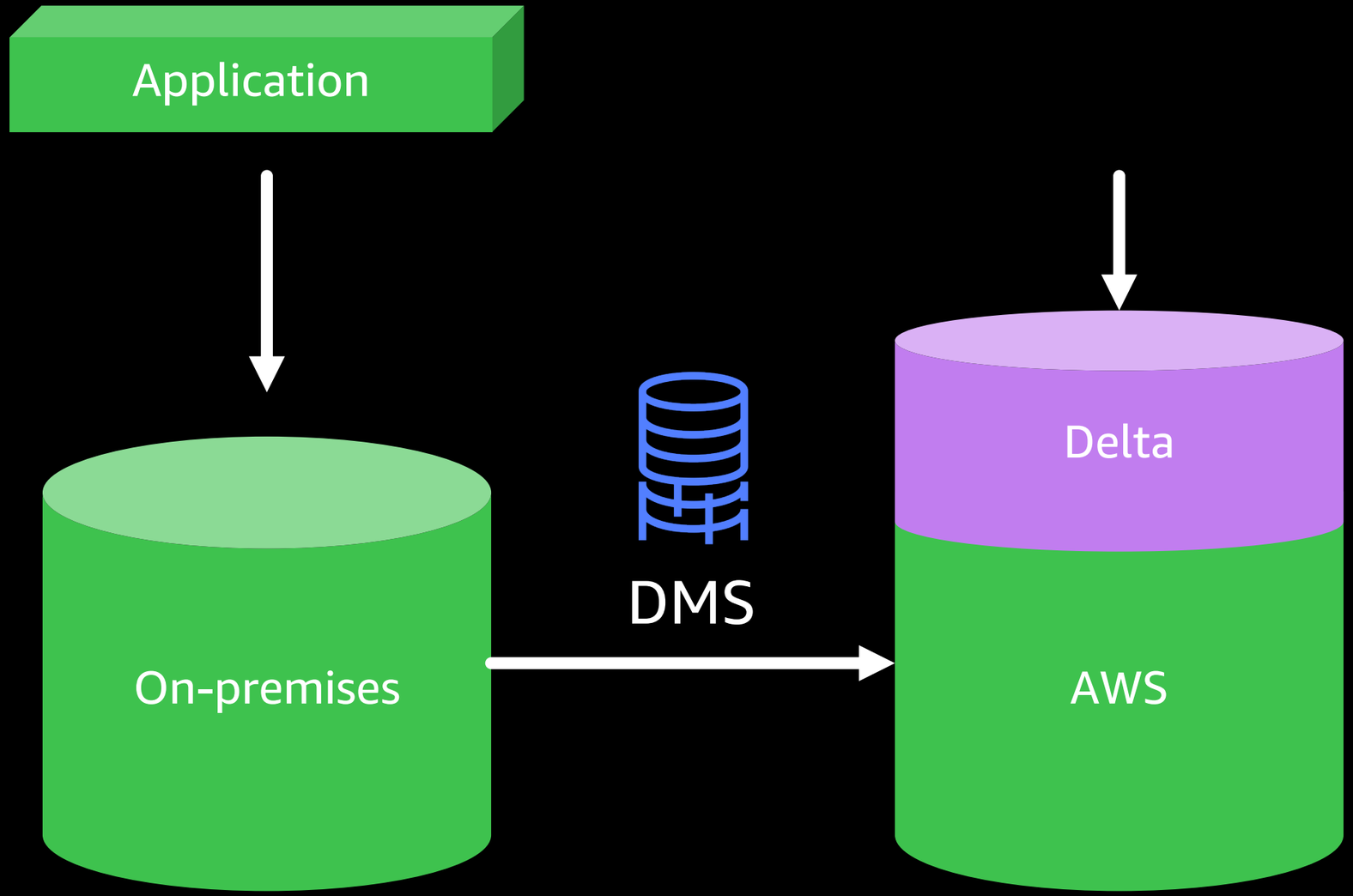
Database cutover with AWS Database Migration Service (AWS DMS)



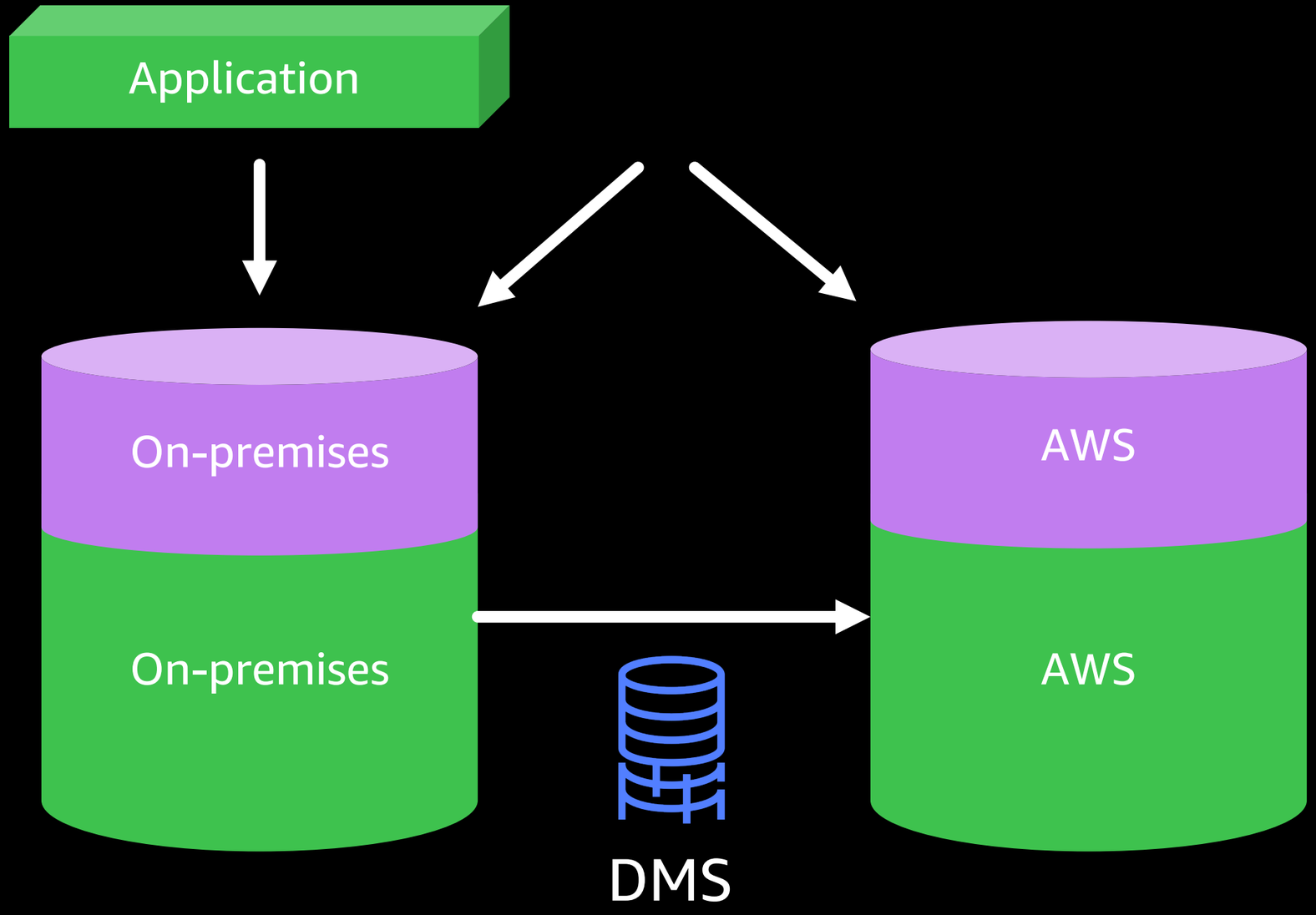
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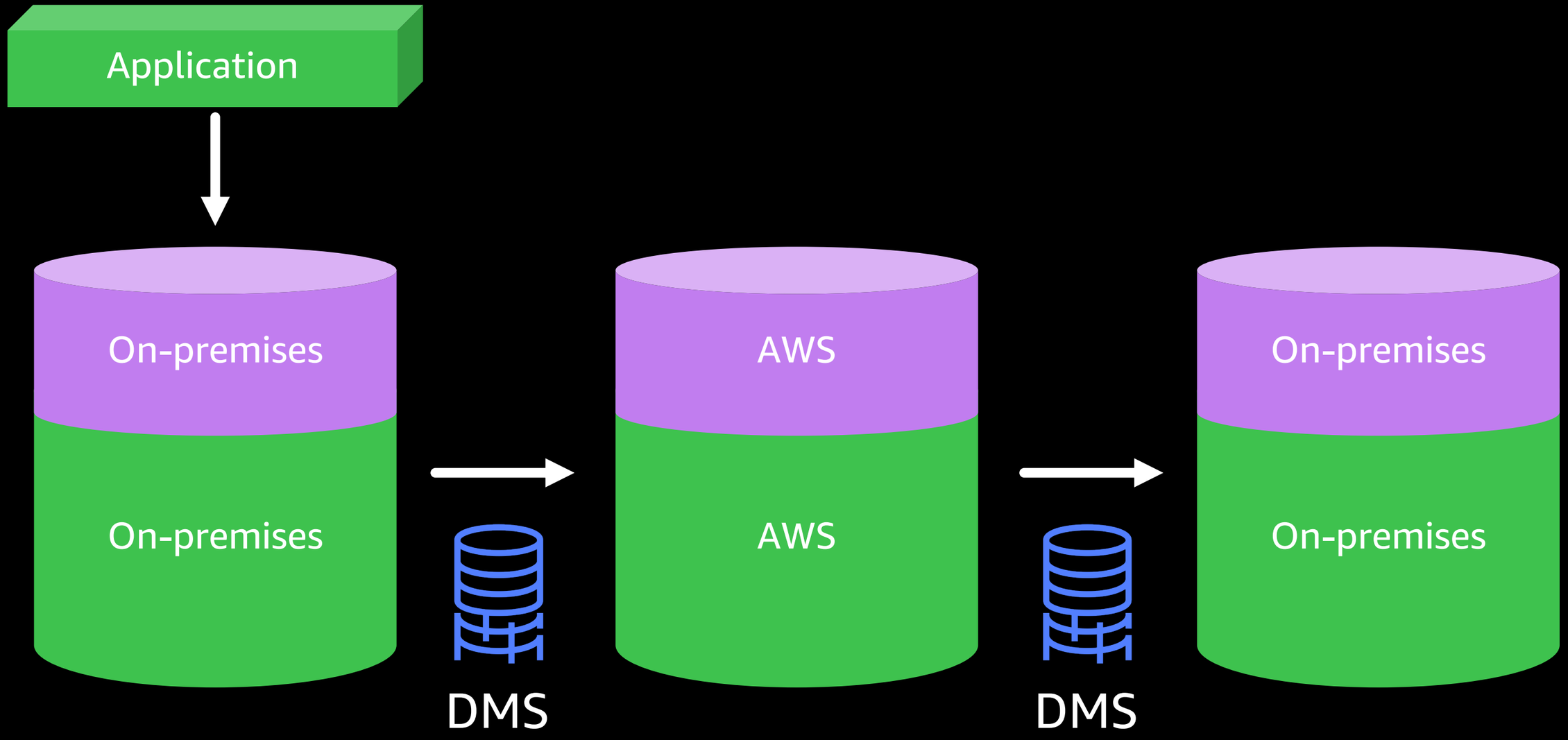
Database cutover - basic fall back



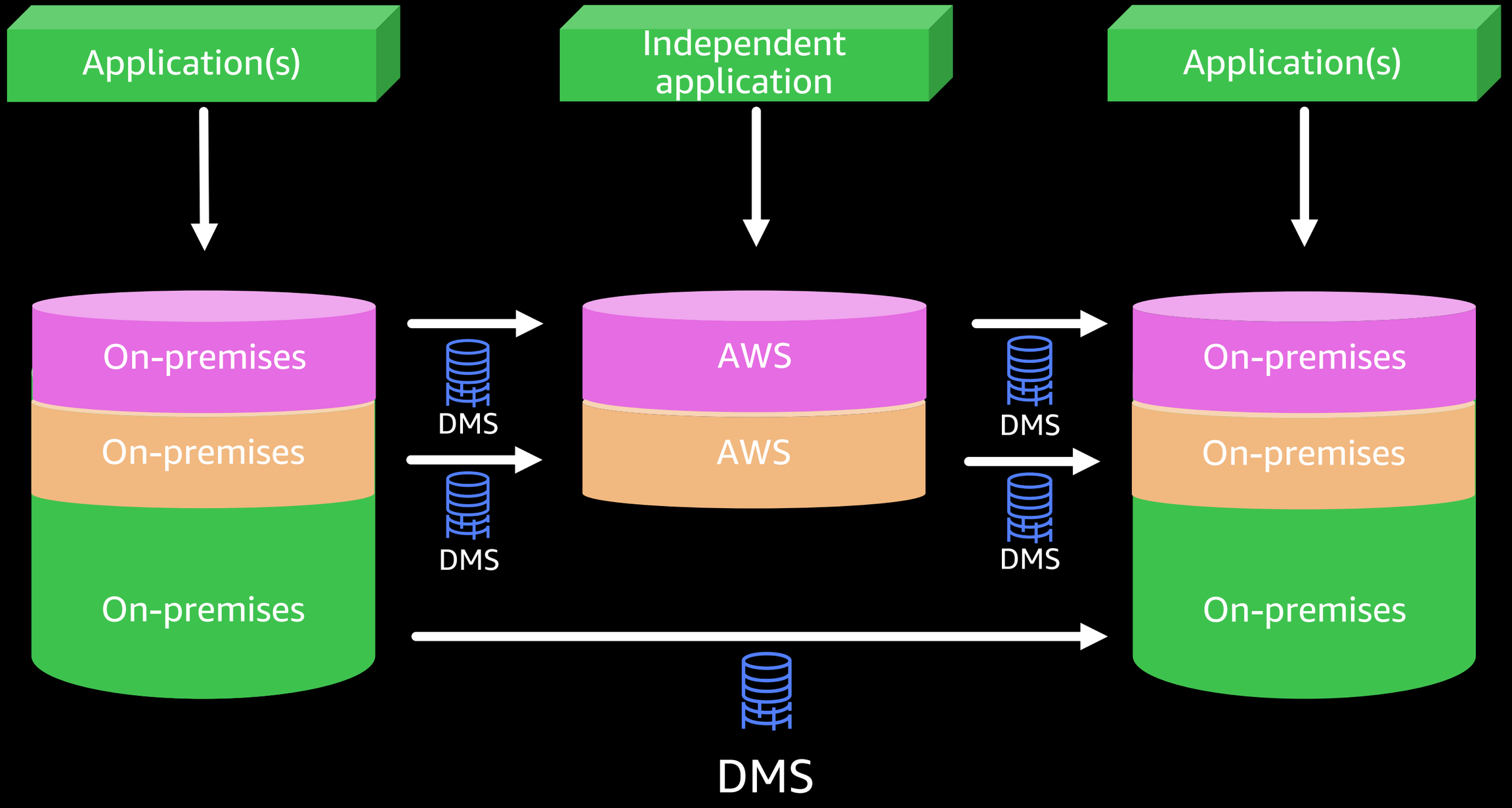
Database cutover - dual write



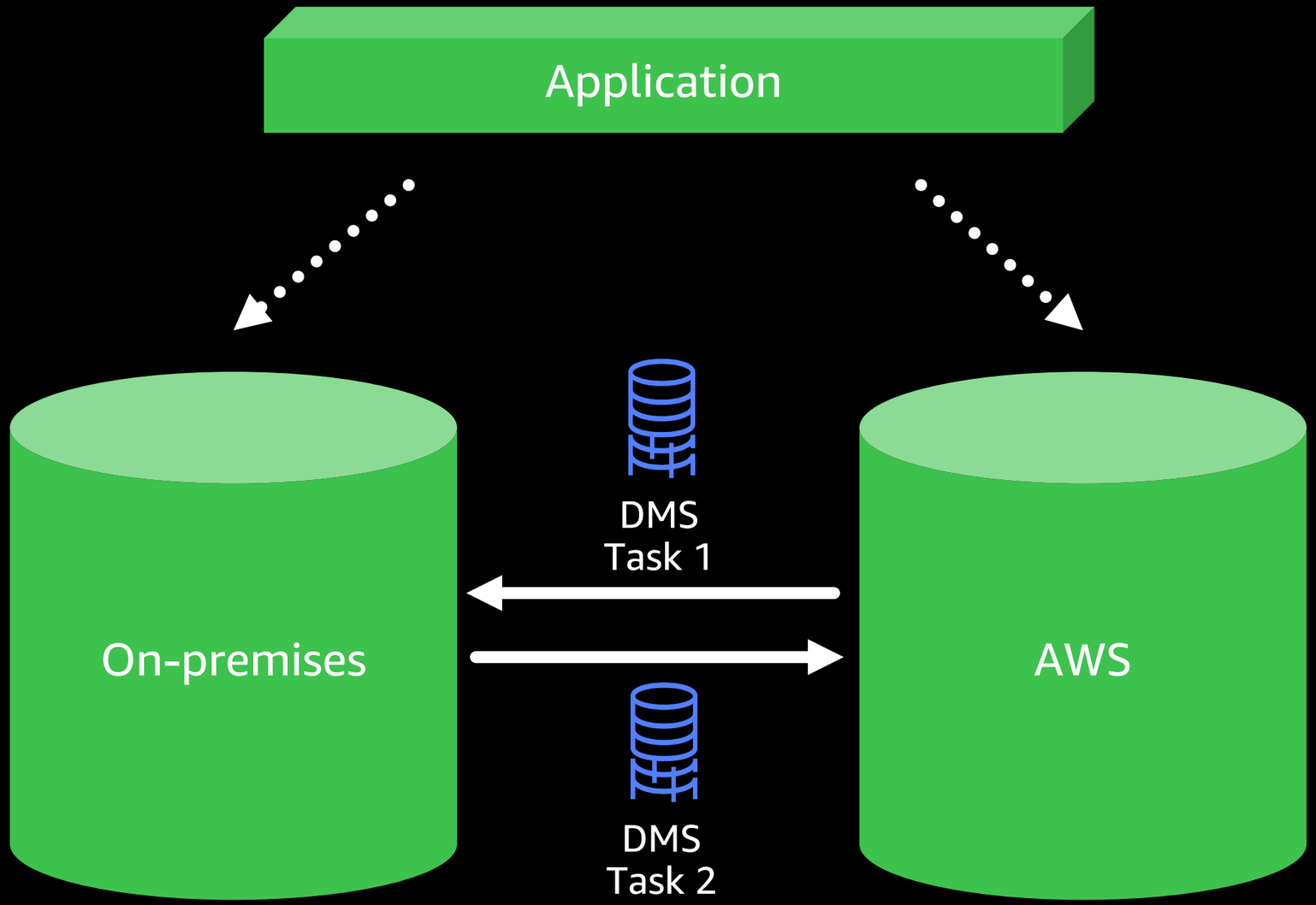
Database cutover - fall forward



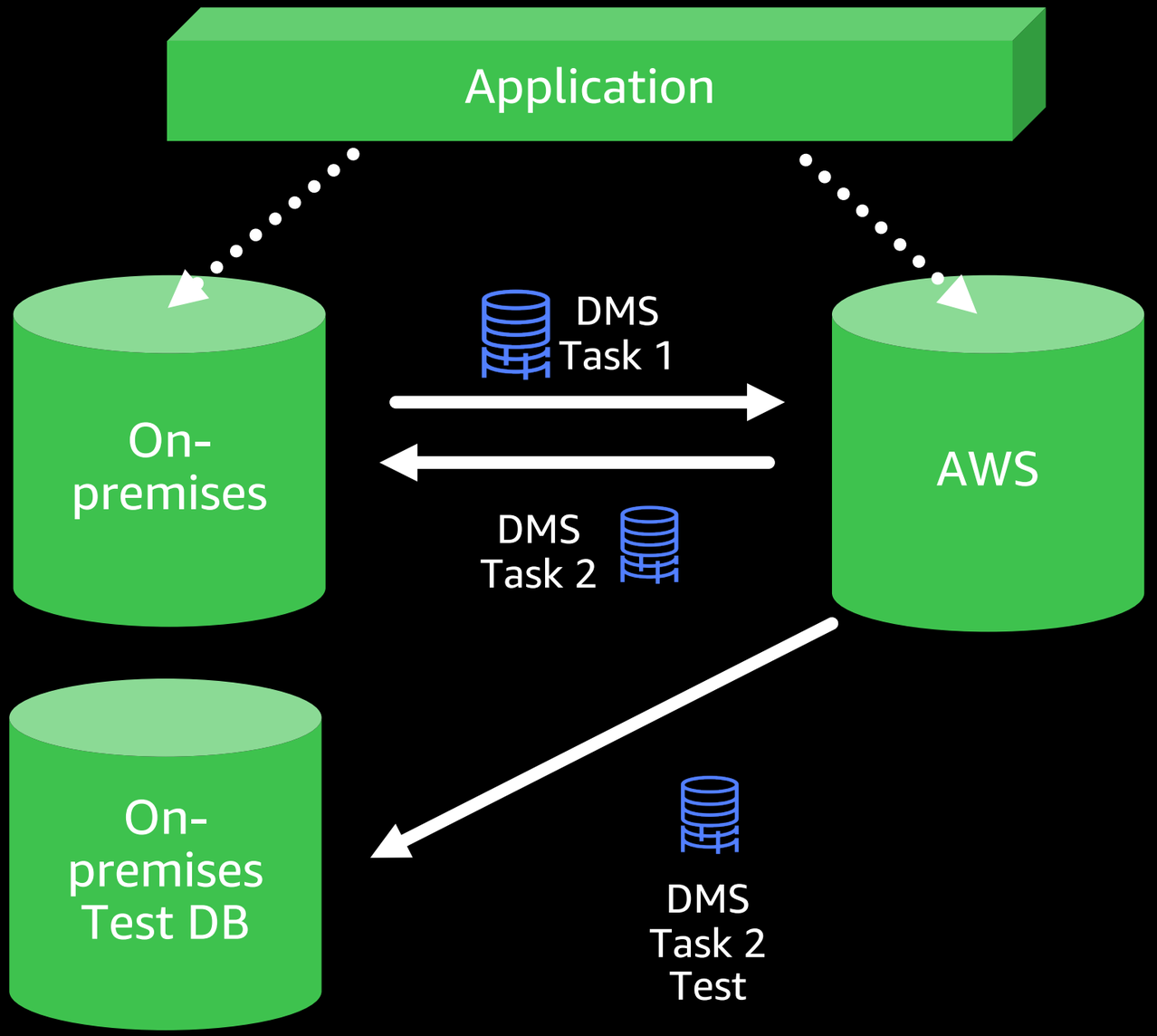
Migrating independent applications



Database cutover – bidirectional replication



Database cutover – bidirectional replication



Post cutover



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Post cutover activities



Putting it all together



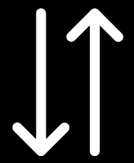
Route 53

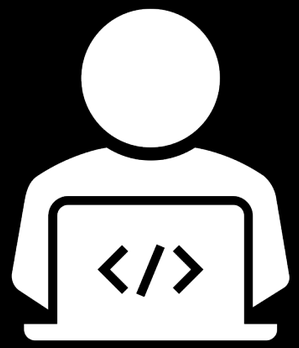
- Consider caching
- Misbehaving clients
- Routing policies

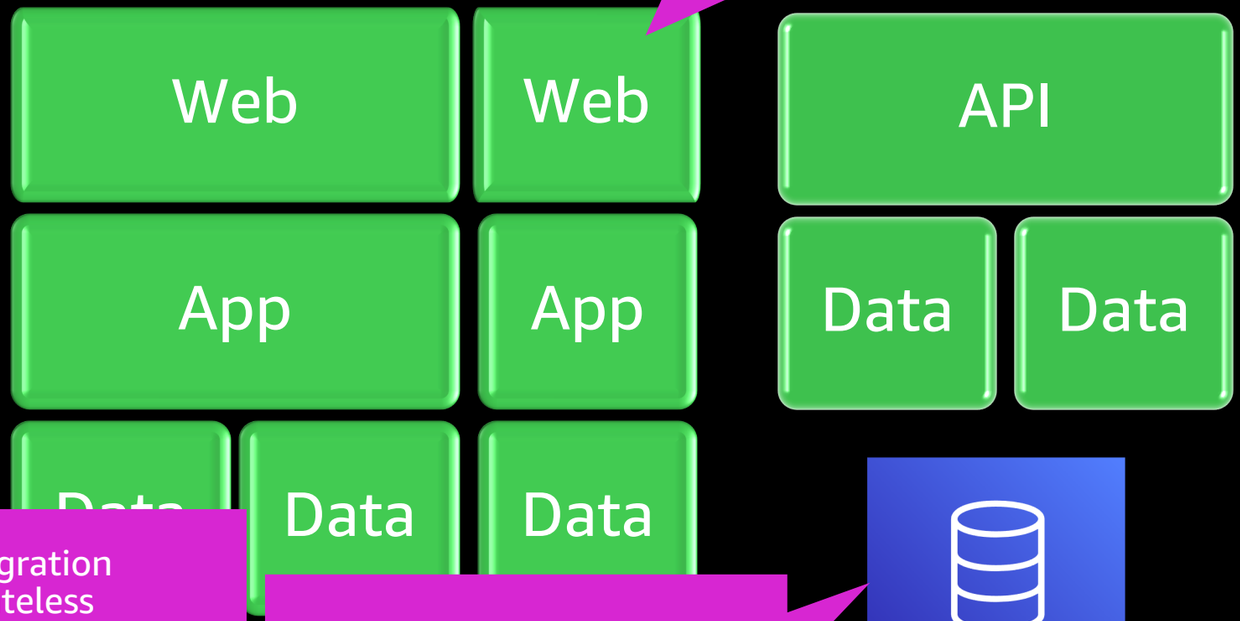


Cloud

- Leverage subdomains for partial migration







- Gradual migration
- DNS for stateless
- Application logic for stateful

- Replication
- Rollback
- Fail forward

AWS database migration service

Putting it all together



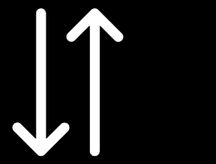
Route 53

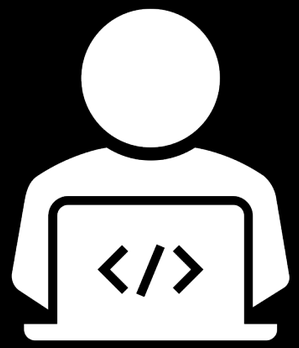
- Consider caching
- Misbehaving clients
- Routing policies

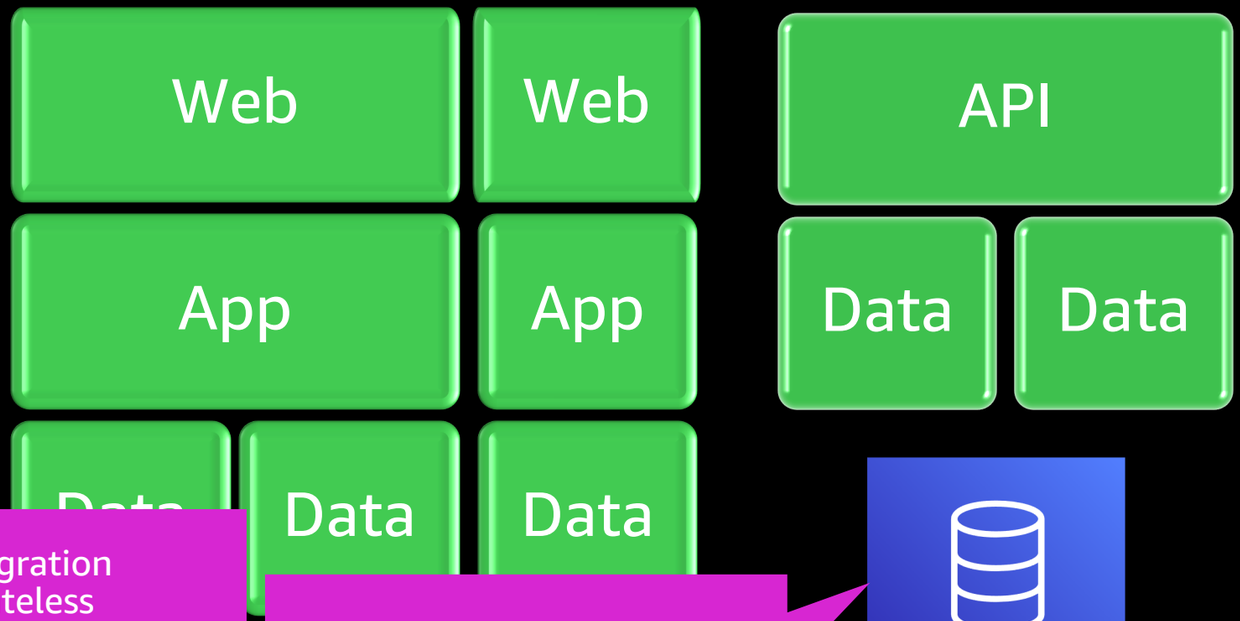


CloudFront

- Extend application logic
- Graceful degradation







- Gradual migration
- DNS for stateless
- Application logic for stateful

- Replication
- Rollback
- Fail forward

AWS database migration service

Resources

Cloud Migration Homepage: https://aws.amazon.com/cloud-migration/

Additional Migration Resources, AWS Prescriptive Guidance, AWS Enterprise Blog Collection: https://aws.amazon.com/cloud-migration/resources/

Migration Immersion Day: https://migration-immersionday.workshop.aws/en

All AWS workshops available here: https://www.workshops.aws/



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