SERVING BILLION OF REQUESTS PER DAY WITH ZERO DOWNTIME BLUE GREEN DEPLOYMENT USING TERRAFORM, JENKINS & ANSIBLE

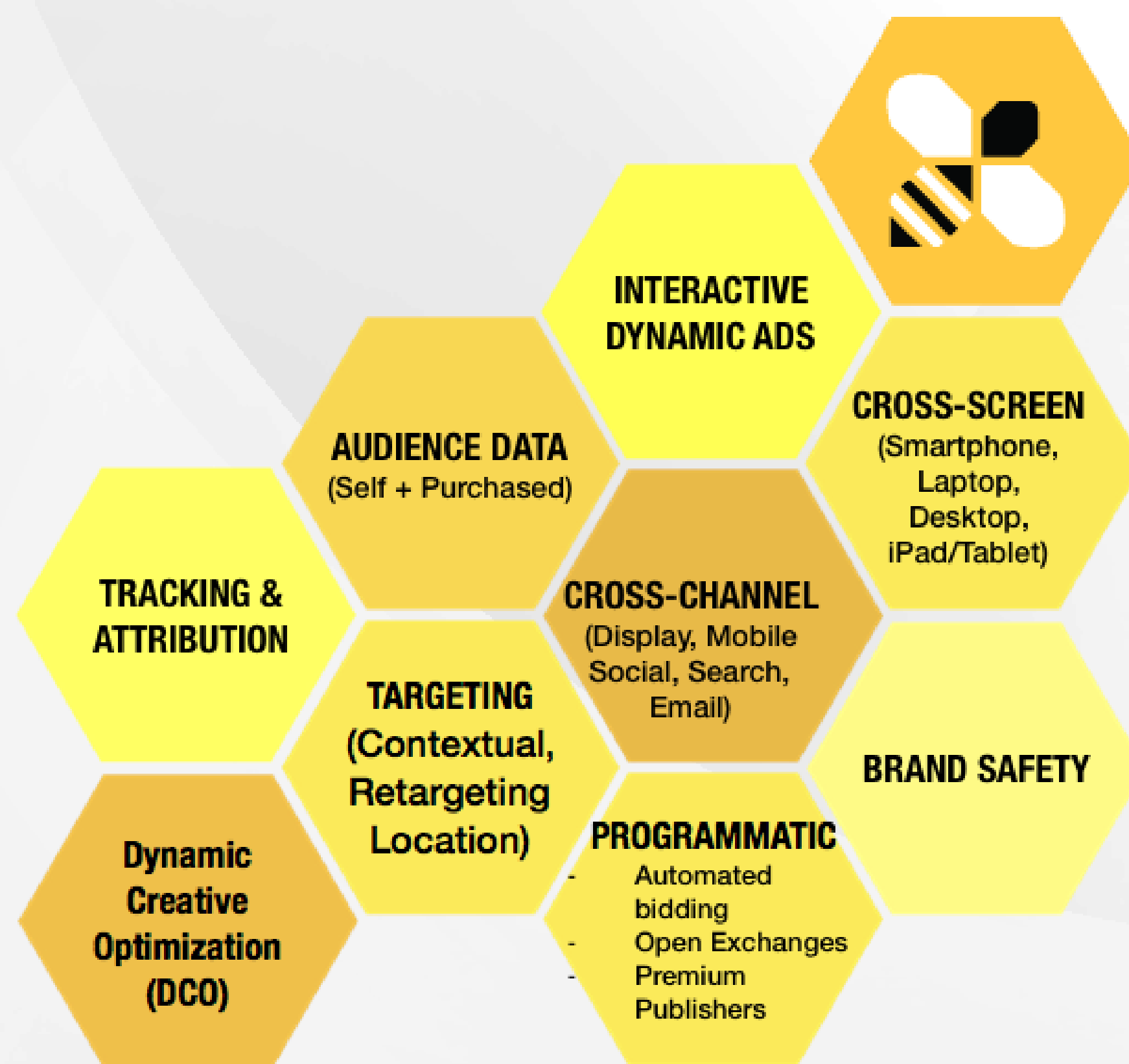Duy Nguyen – Technical Manager @ KNOREX

ABOUT KNOREX

Established in 2010, Knorex provides **Precision Performance Marketing** products and solutions to leading trading desks, agencies and brands.

Offices and direct business presence across US, UK, Australia, China, India and Southeast Asia (SEA)
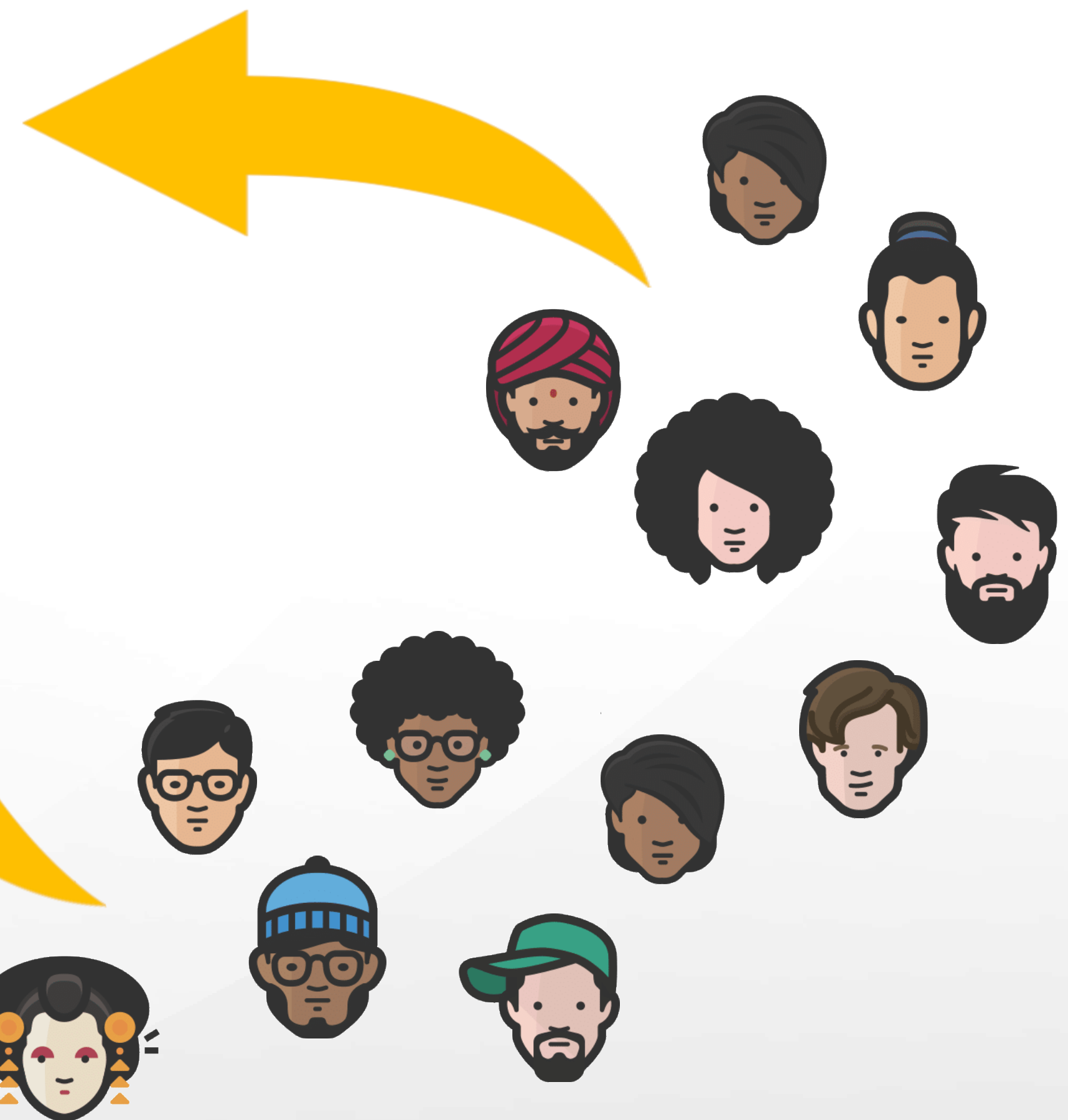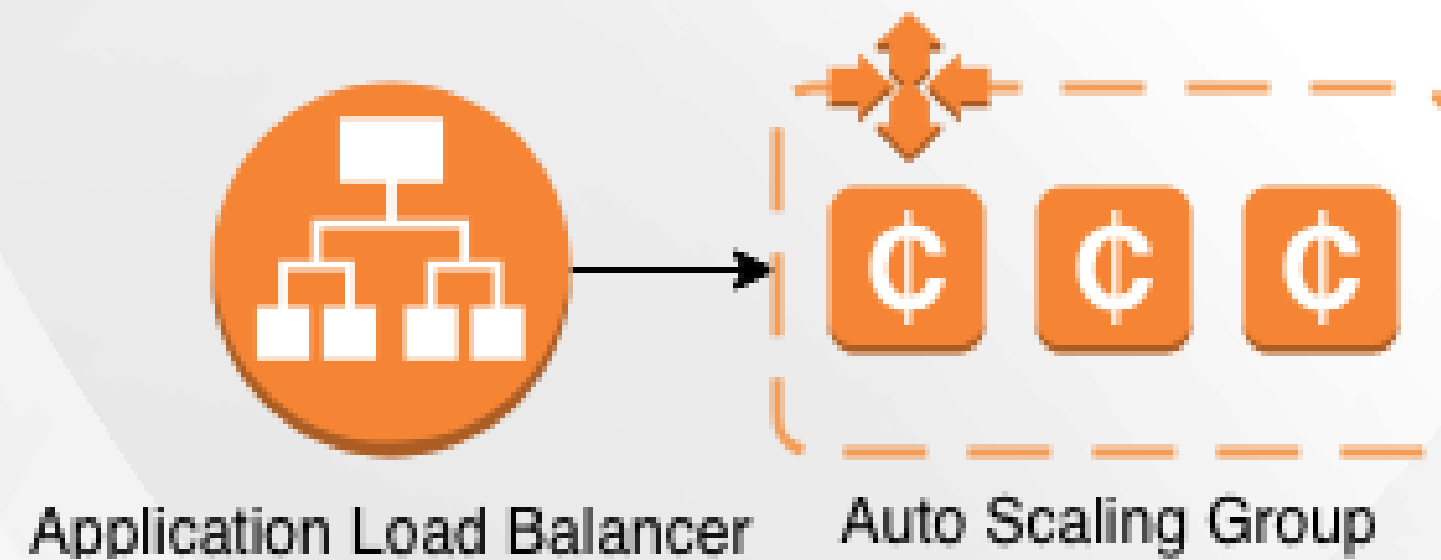
8
OFFICES

110+
STAFFS

PROBLEM STATEMENT

- Huge & unpredictable traffic rate
  - ALB – ASG architecture

Application Load Balancer   Auto Scaling Group

  - Unpredictable scaling events & huge number of application nodes

- Continuous requests from global public users, regardless of time zone make it hard to find low traffic period

- Short release cycle, not including hot-fixes

- Cannot allow any downtime or maintenance

APPROACHES

- Rolling deployment
  - Long rolling time for large ASG
  - Hard to rollback
  - Cannot do pre-testing
  - Complex

Auto Scaling Group

- Sampling deployment
  - Simpler
  - Can do pre-testing on sample instance
  - Long rolling time for large ASG
  - Hard to rollback

Auto Scaling Group
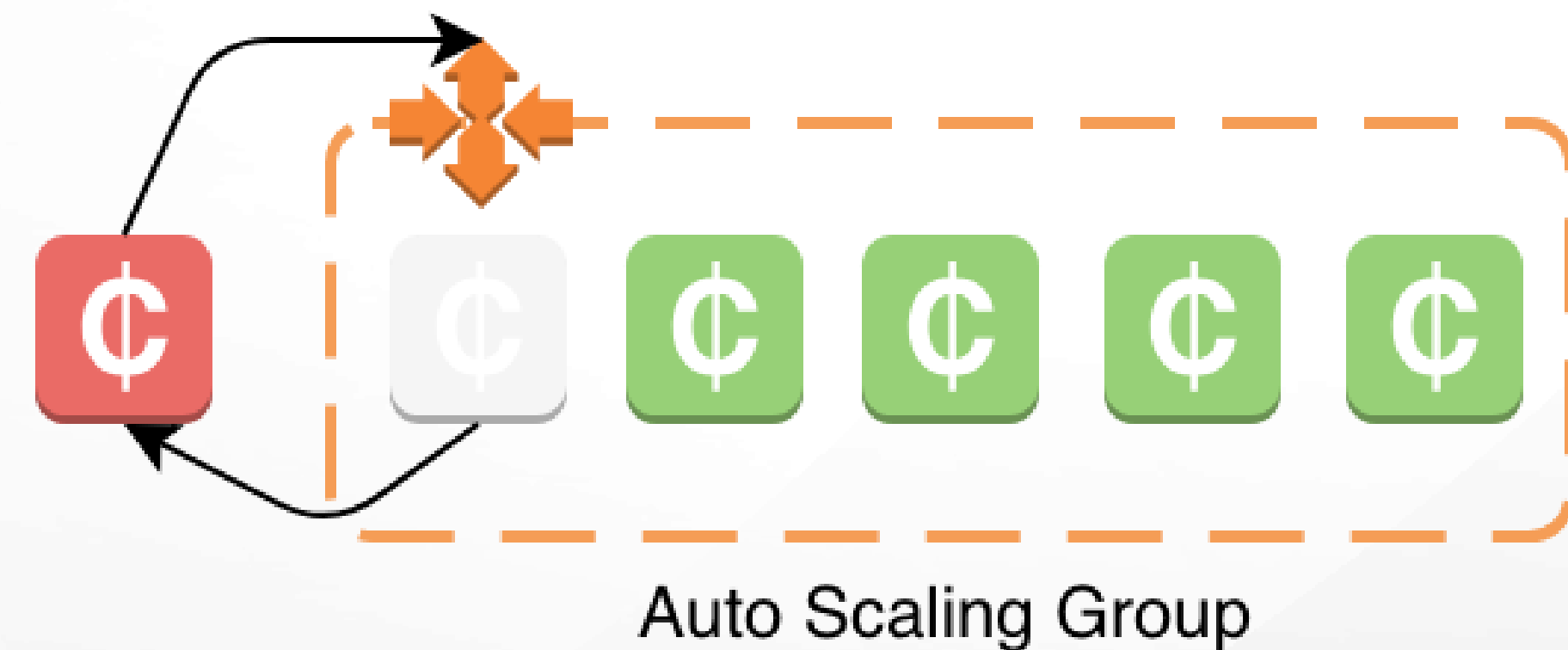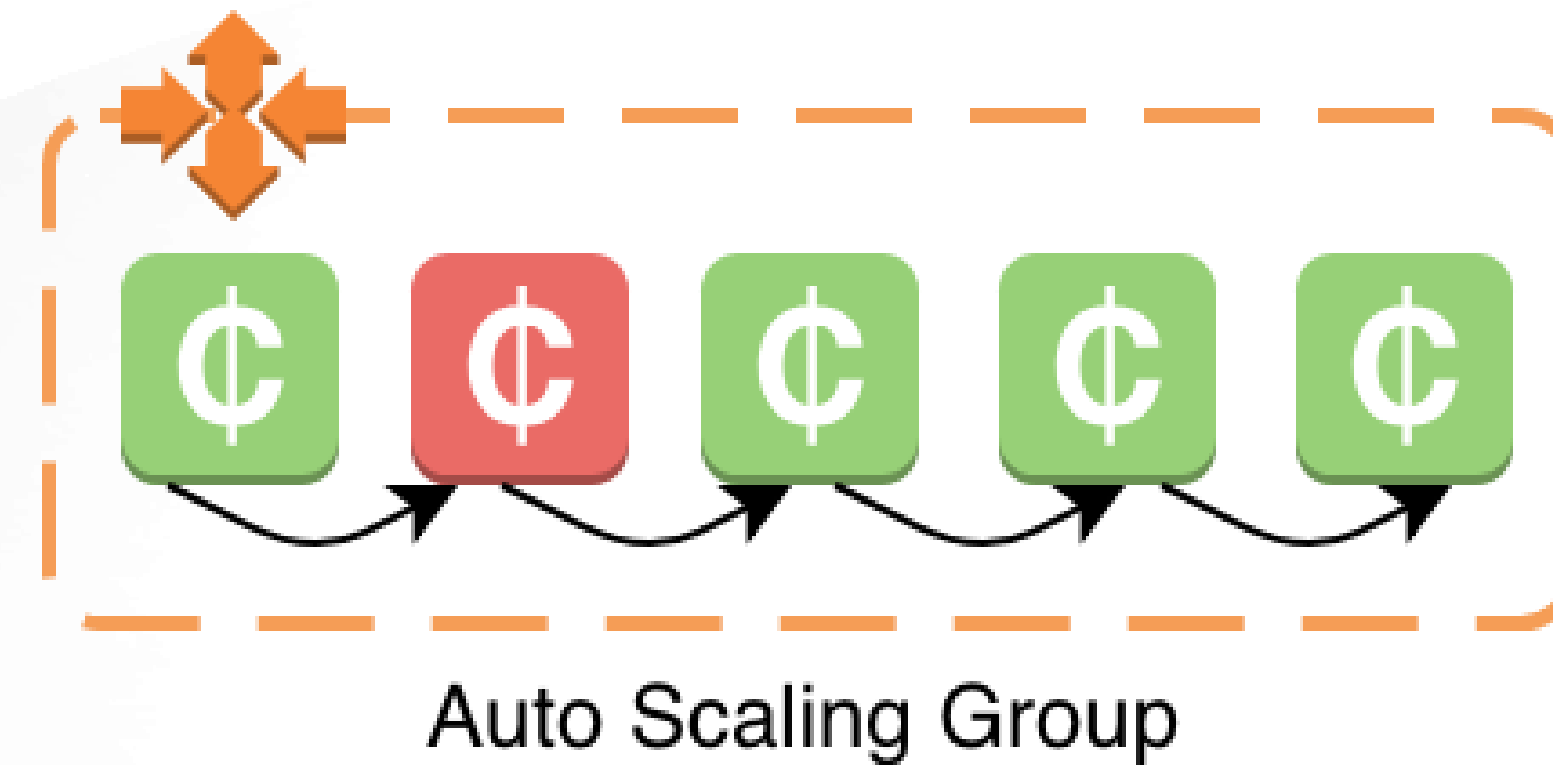
BLUE GREEN DEPLOYMENT

- Can do pre-testing in production

- No need rolling deploy

- Easy to rollback to previous state whenever something goes wrong

- No downtime, can deploy anytime regardless of traffic rate

Blue Environment

Green Environment

Deployment

Smoke tests

Traffic

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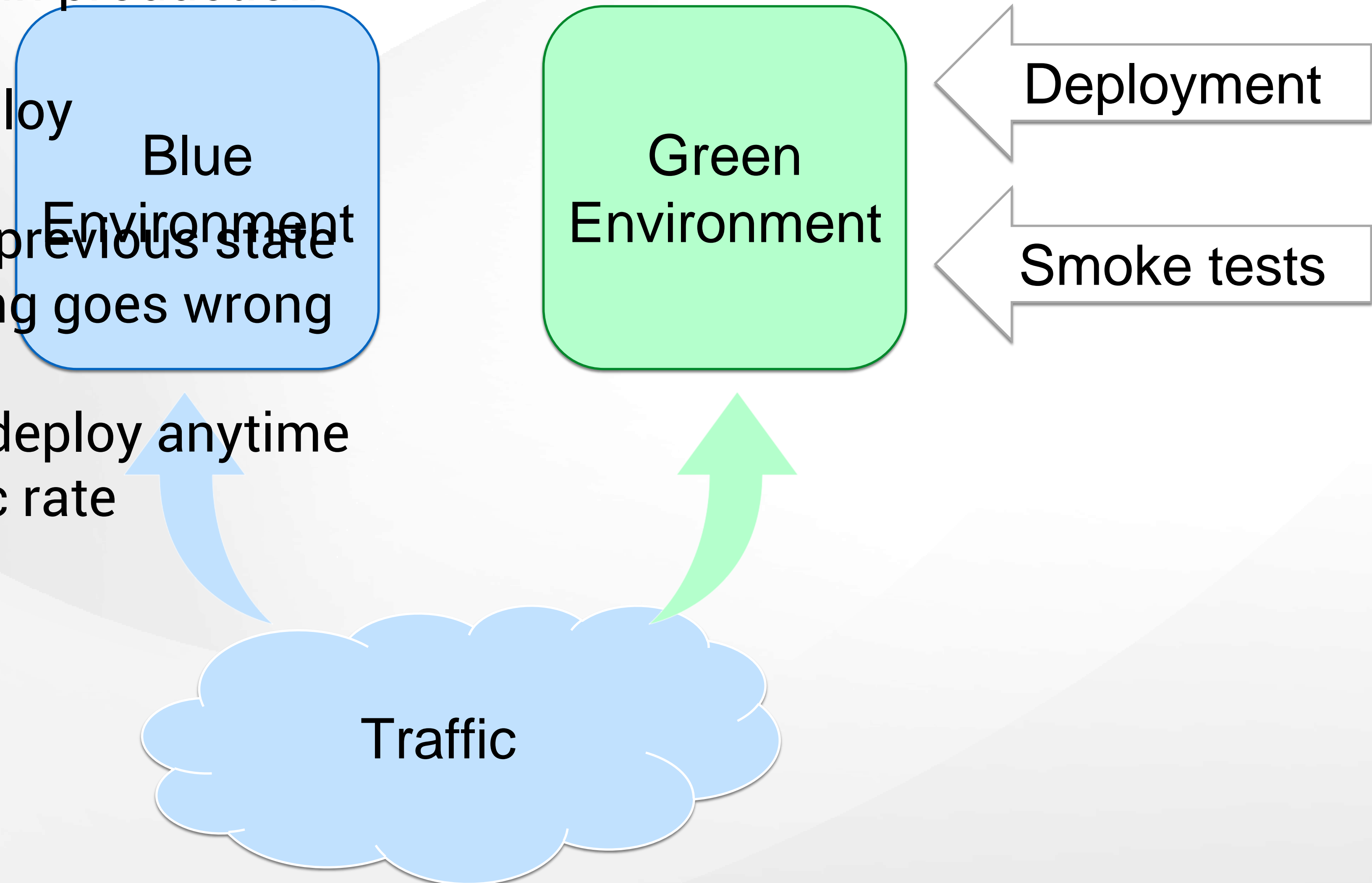
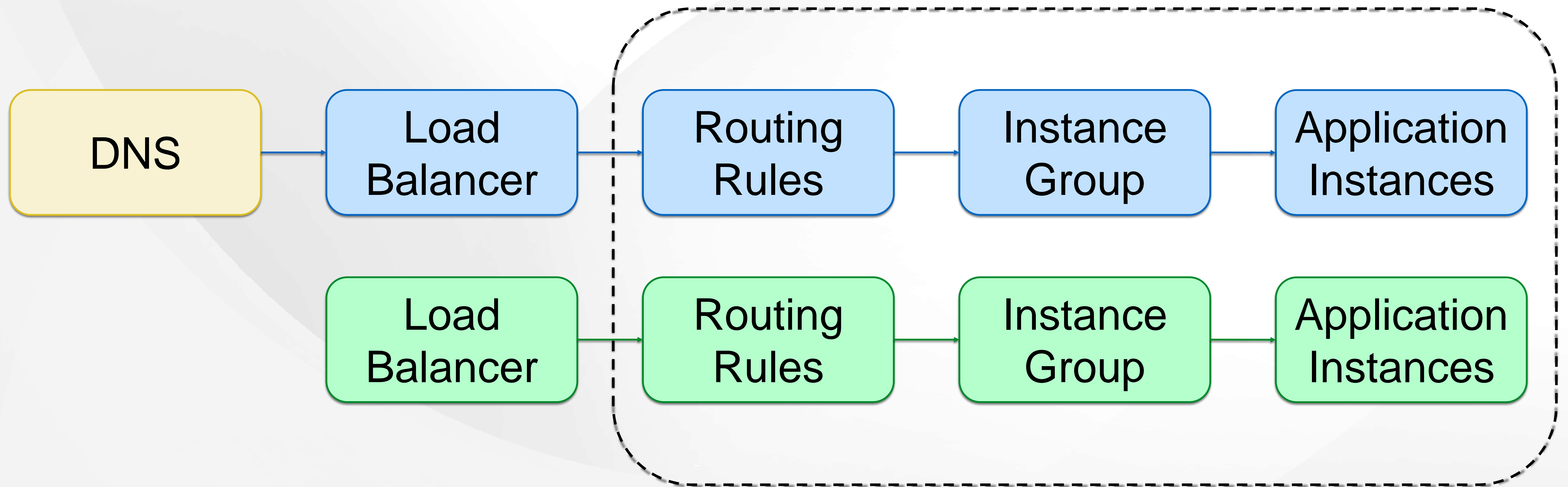# IN THE CLOUD

THE PLAYERS

Jenkins

- CI/CD
- Automate deployment flow
- Many integrations
- Customizable

HashiCorp Terraform

- Infrastructure As Code
- Automate infrastructure provisioning
- Templating/Versioning infrastructure
- Support various clouds

ANSIBLE

- Automate application provisioning
- Agentless
- Simple but effective

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WHY TERRAFORM?

CLI/API to create Green Routing Rules

CLI/API to create Green Instance Group

…

CLI/API to change Routing Rules

…

CLI/API to delete Blue Instance Group

CLI/API to delete Blue Routing Rules

AWS
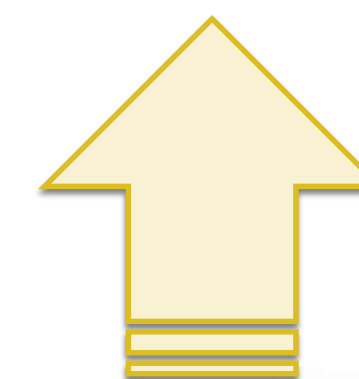
Instance Group | Instance Group

Routing Rules | Routing Rules

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INFRASTRUCTURE AS STATE

Blue

Inst

ASG

Route to Blue

ALB

Blue & Green

Inst	Inst
ASG	ASG
Route to Blue	

ALB

Route to Green

Inst	Inst
ASG	ASG
	Route to Green

ALB

Green

Inst

ASG

Route to Green

ALB

THE PIPELINE

Blue

Inst	
ASG	
Route to Blue	

ALB

Blue & Green

Inst	Inst
ASG	ASG
Route to Blue	

ALB

Apply **Blue** state

Route to Green

Inst	
ASG	
Route to Green	

ALB

to Green

Inst
Route to Green

Apply **Green** state

LB
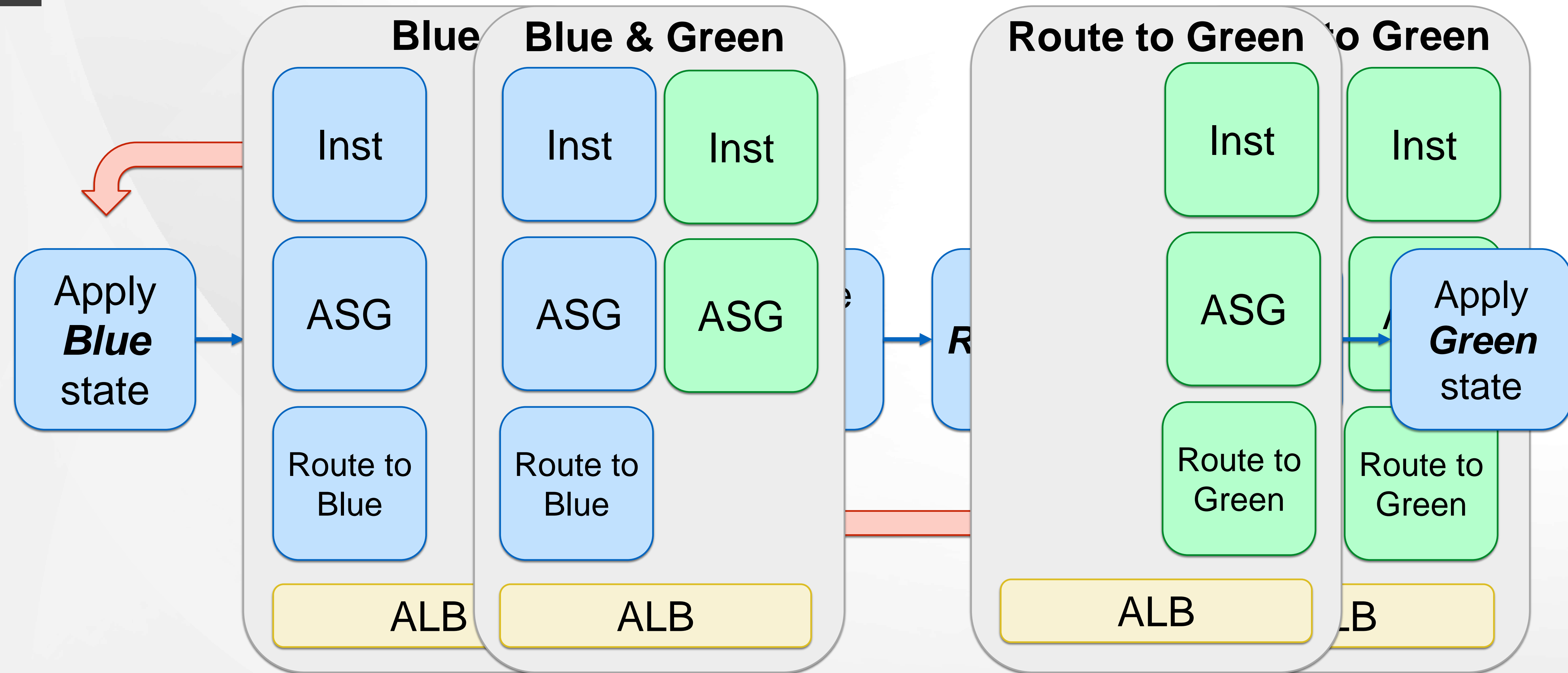
ALL TOGETHER

media-broker-infrastru

Name

.. ↰

📁 templates

📁 version

📄 alb-rule-70.tf

📄 asg-tg-70.tf

📄 main.tf

📄 params.tf

📄 terraform.tfvars

```
309    dir ("${env.WORKSPACE}") {
310        git credentialsId: 'jenkins-git', url: "${sys_jenkins_pipline}", branch: 'master'
311    }
312    start_deployment();
313    deploy_green();
314    while ("${finish_}"=="false") {
315        create_green_url();
316        while ("${continue_}"=="false") {
317            deploy_app();
318            if ("${deploy_abort}" == "true") {
319                break;
320            }
321            test_green();
322            continue_deploy();
323            if ("${continue_abort}" == "true") {
324                break;
325            }
326        }
327        if ("${continue_abort}" == "true" || "${deploy_abort}" == "true") {
328            break;
329        }
330        continue_ = false;
331        delete_green_url();
332        route_to_green();
333        test_prod();
334        finish_deploy();
335        if ("${finish_abort}" == "true") {
336            break;
337        }
338        if ("${finish_}"=="false") {
339            route_to_blue();
340        }
341    }
342    if ("${continue_abort}" == "false" && "${finish_abort}" == "false" && "${deploy_ab
343        destroy_blue();
344        post_action();
345        notifyBuild('SUCCESS', 'at', 'sysalerts@knorex.com, xpo_mb@knorex.com')
346    }
347  }
```

☁ **Build History**   trend ︿

| find | x |

✅ **#78**   Nov 21, 2018 11:42 AM   👤

✅ **#77**   Nov 21, 2018 11:41 AM   👤

✅ **#76**   Nov 21, 2018 11:39 AM   👤

❗ **#75**   Nov 21, 2018 11:31 AM   👤

❗ **#74**   Nov 21, 2018 11:30 AM   👤

❗ **#73**   Nov 21, 2018 11:28 AM   👤

✅ **#72**   Nov 20, 2018 11:56 PM   👤

✅ **#71**   Nov 20, 2018 11:45 PM   👤

✅ **#70**   Nov 20, 2018 11:21 PM   👤

❗ **#69**   Nov 20, 2018 10:56 PM   👤

📶 RSS for all   📶 RSS for failures

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DRAWBACKS

- Require to Terraformize infrastructure

- Terraform is bleeding-edge tech

- Deploy time might still long, depends on cloud resources type

- Super complex

END

KEEP CALM AND CLICK "BUILD NOW"

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