Large scale systems

X-Large scale

Ultra-large-scale systems (ULSS)

Who am I ?

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devstaff member

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Large (xl/ultra) scale systems

What are they ?

Ultra-large-scale system (ULSS) is a term used in fields including Computer Science, Software Engineering and Systems Engineering to refer to software intensive systems with unprecedented amounts of hardware, lines of source code, numbers of users, and volumes of data.

Large (xl/ultra) scale systems

Then

Legacy large or extra large systems apply on

Mainframes mostly and a few distributed

Health / Medical
Banks - Army
Universities - Telecoms

Large (xl/ultra) scale systems

Now

Legacy large or extra large systems apply on

Mainframes – Distributed -
Large scale dedicated servers infras – Vms - Docker

Health/Medical
Bank - Army
Universities

Travel - Busy Portals – E-com
Data centers – Big Data - Animation
Netflix....

Large (xl/ultra) scale systems

Tomorrow

Unikernels - Serverless infrastructure

...

Large (xl/ultra) scale systems

Size brings problems

Bigger is better – Size matters

But...

Large (xl/ultra) scale systems

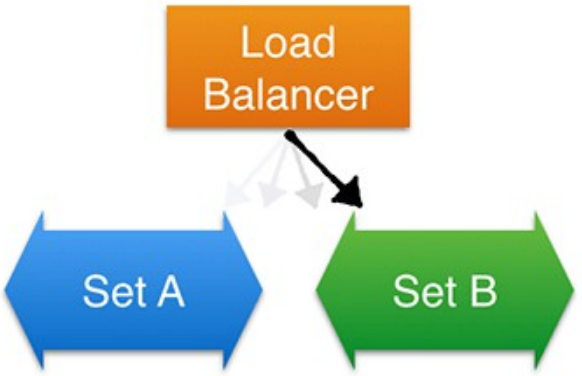
Issues

Provisioning
Configuring
Orchestrating
Testing - Staging
Deploying - Scaling
CI/CD/CD
Monitoring - Alerting

Large (xl/ultra) scale systems

EMPTY SLIDE

Large scale systems
Blue – Green Deployments

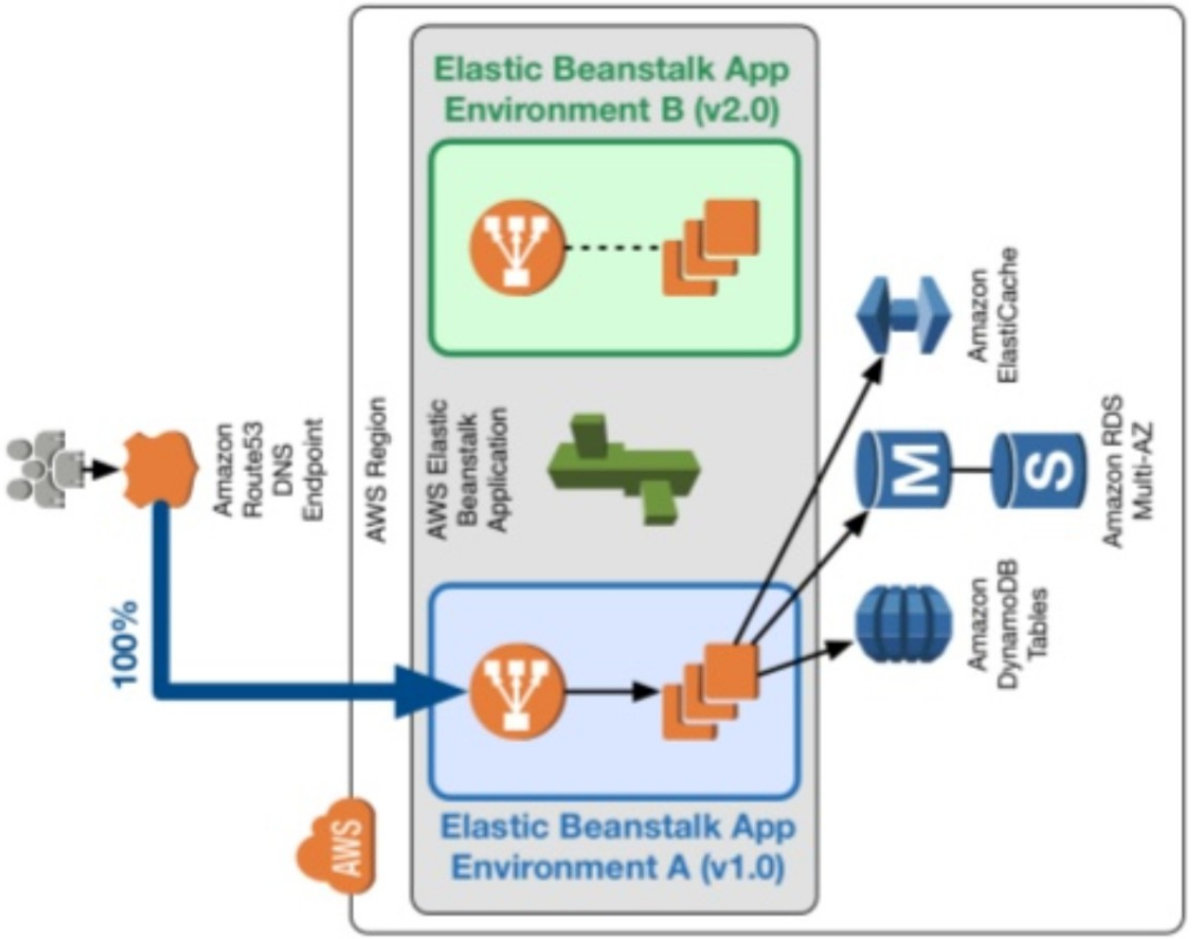


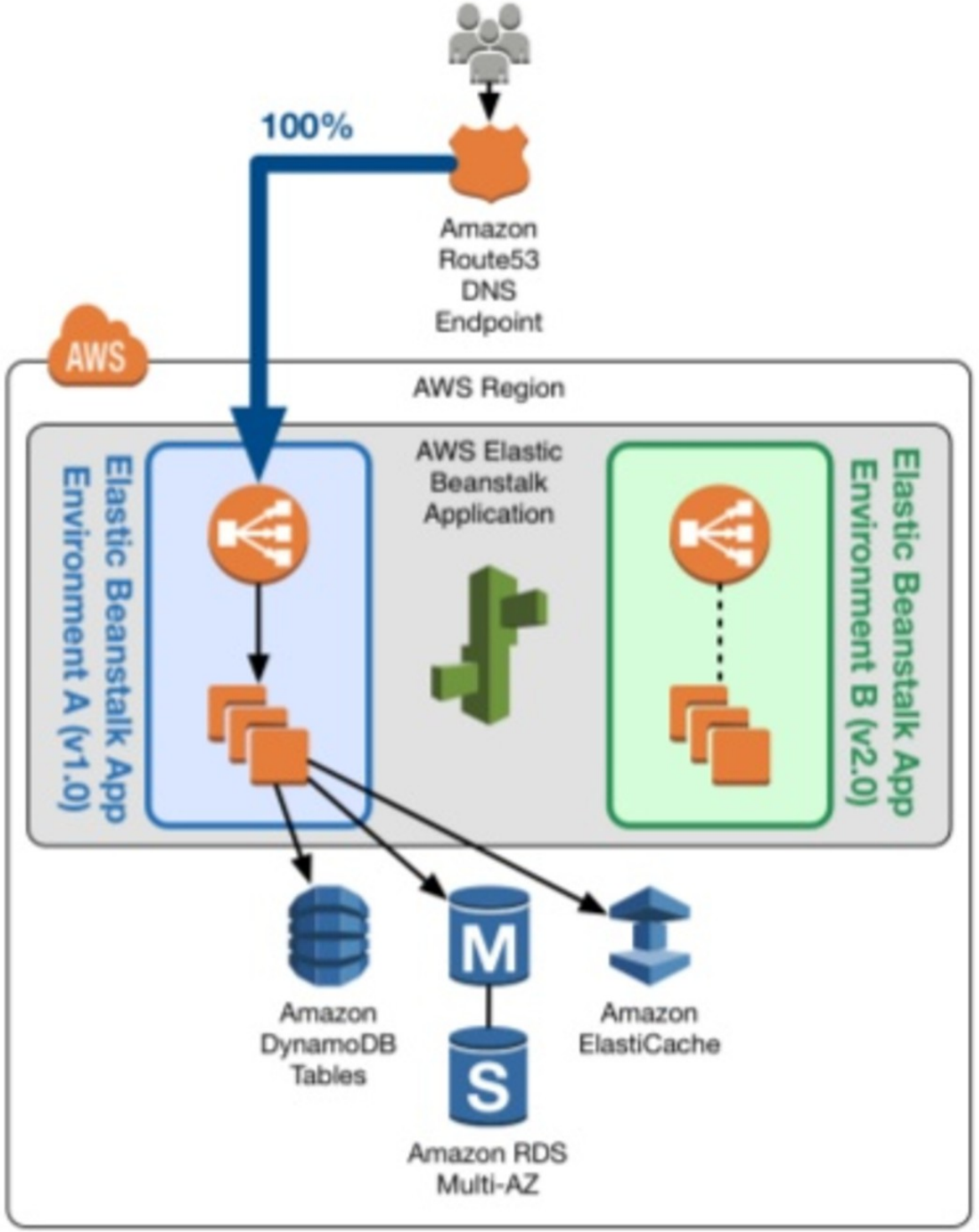
Or is Red – Black ?

Large scale systems
Blue – Green Deployments

It is a procedure
A great way to deploy on large scale systems
minimise downtime
A/B | X/Y sectioning

Large scale systems
Blue – Green Deployments





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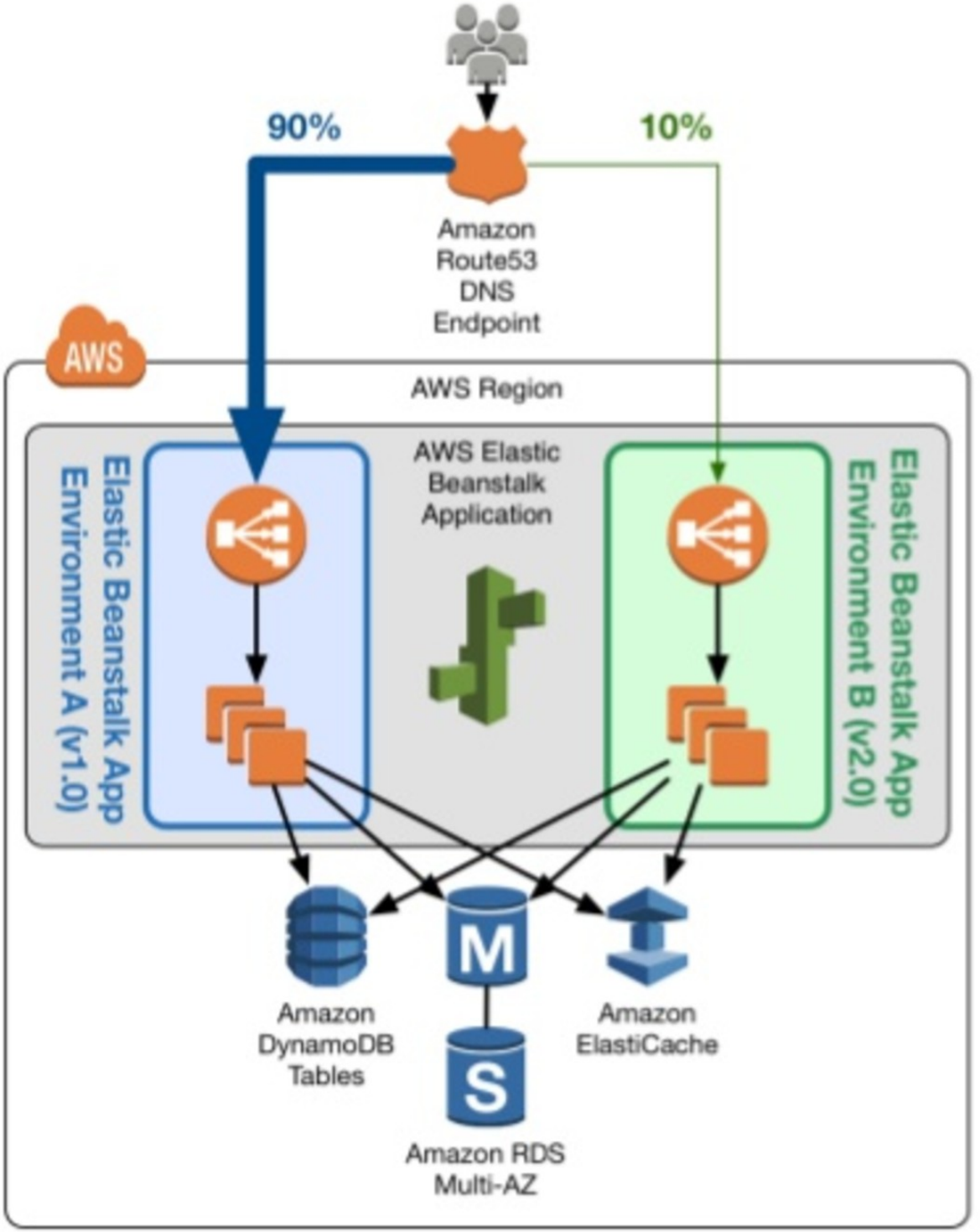

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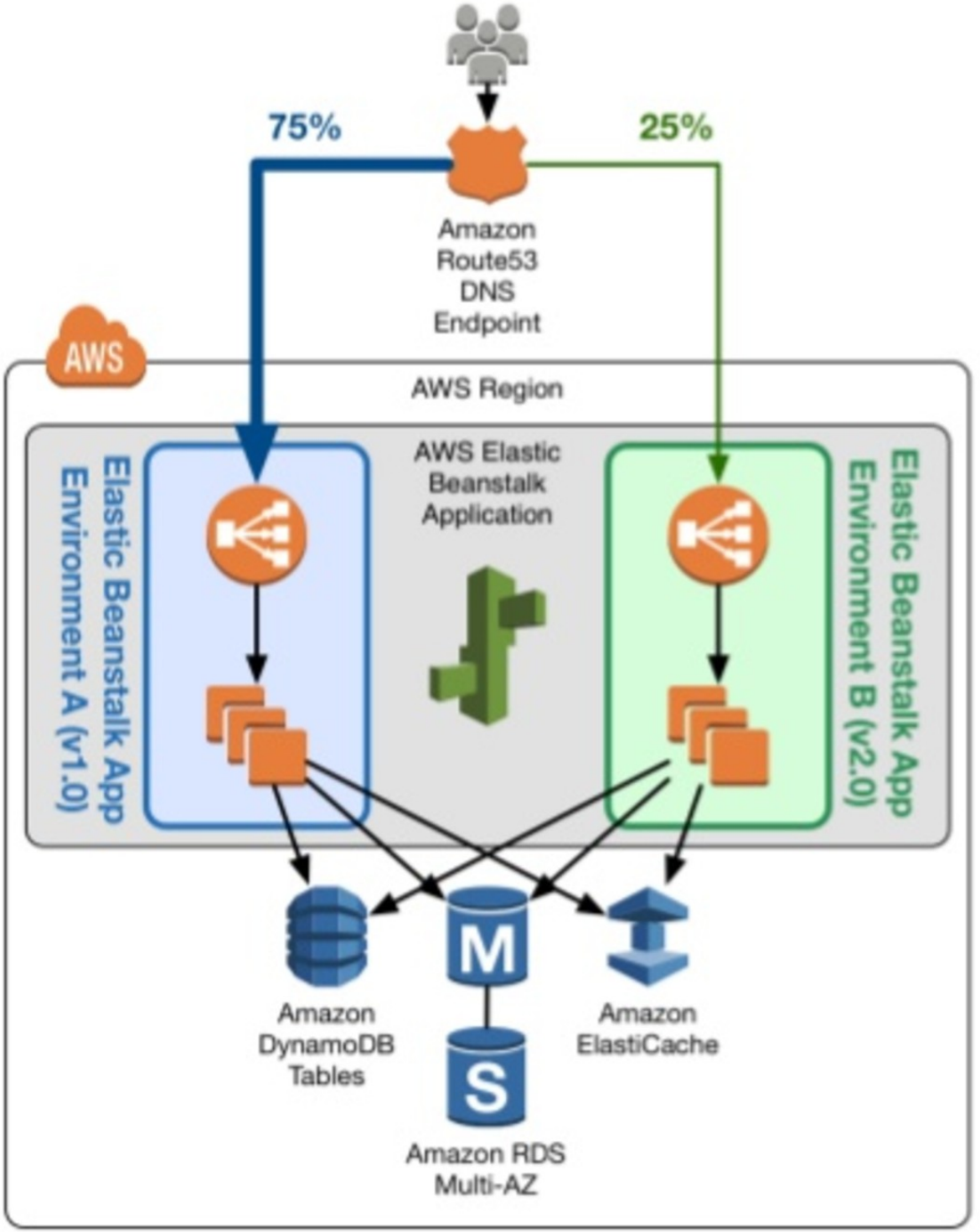

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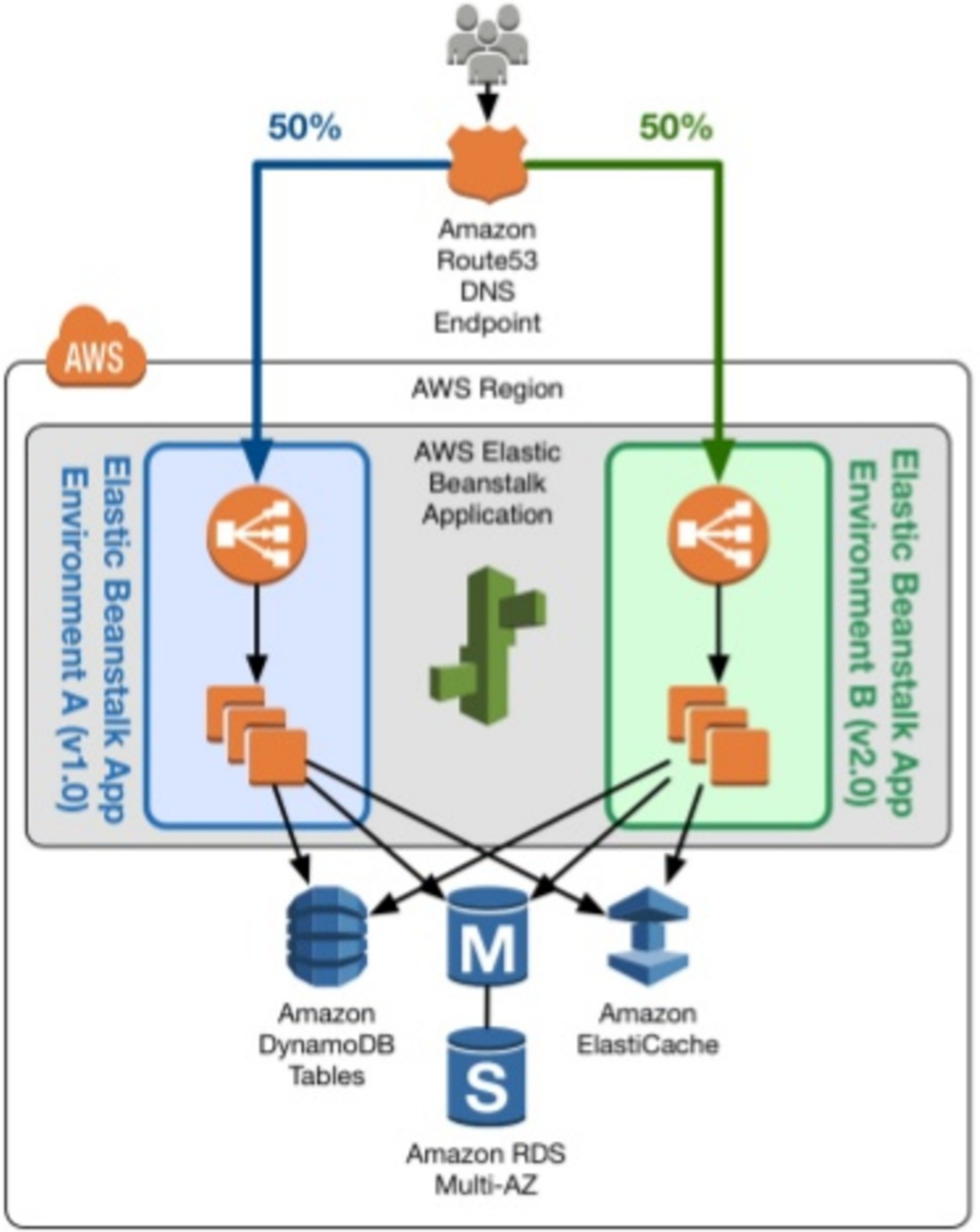

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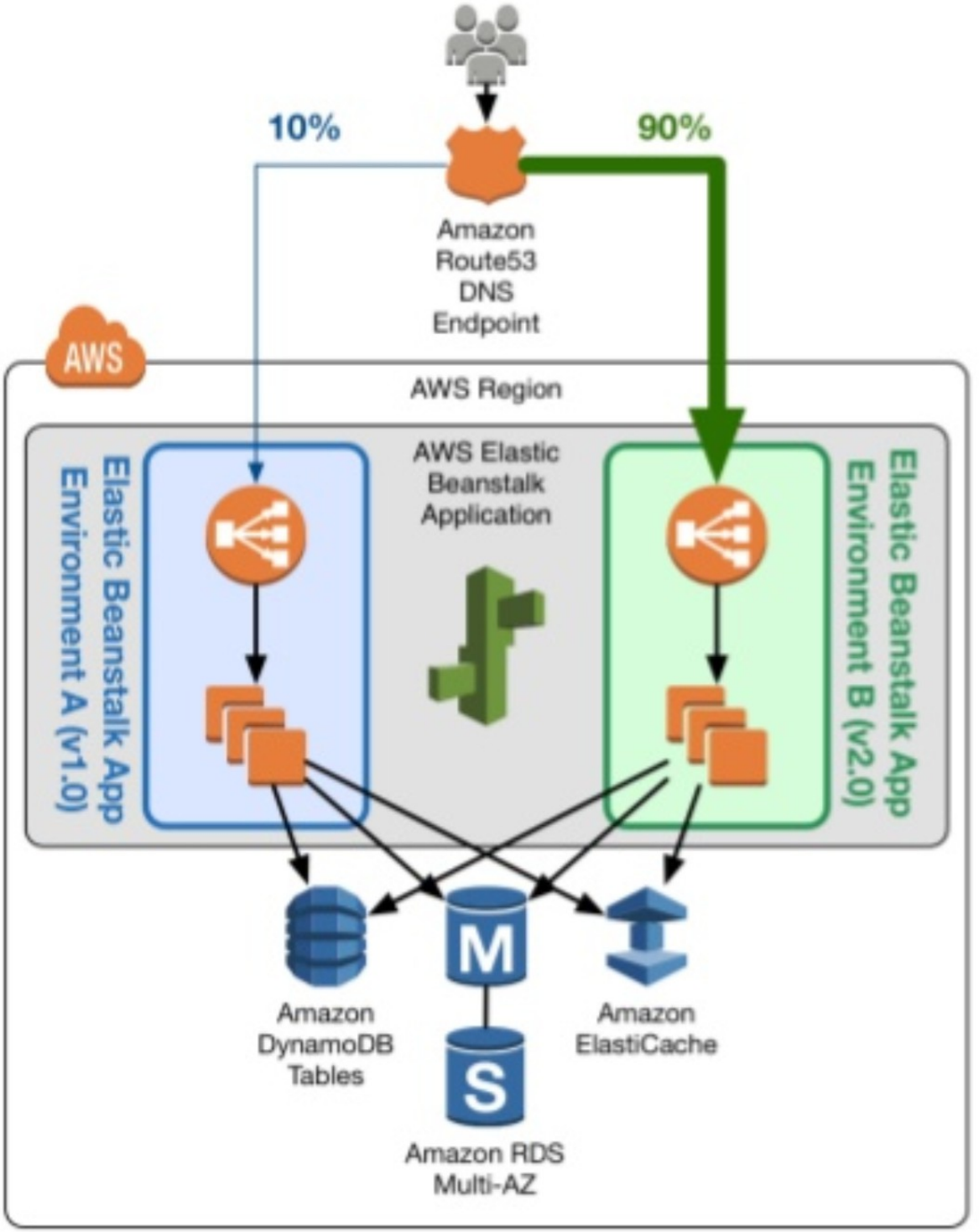

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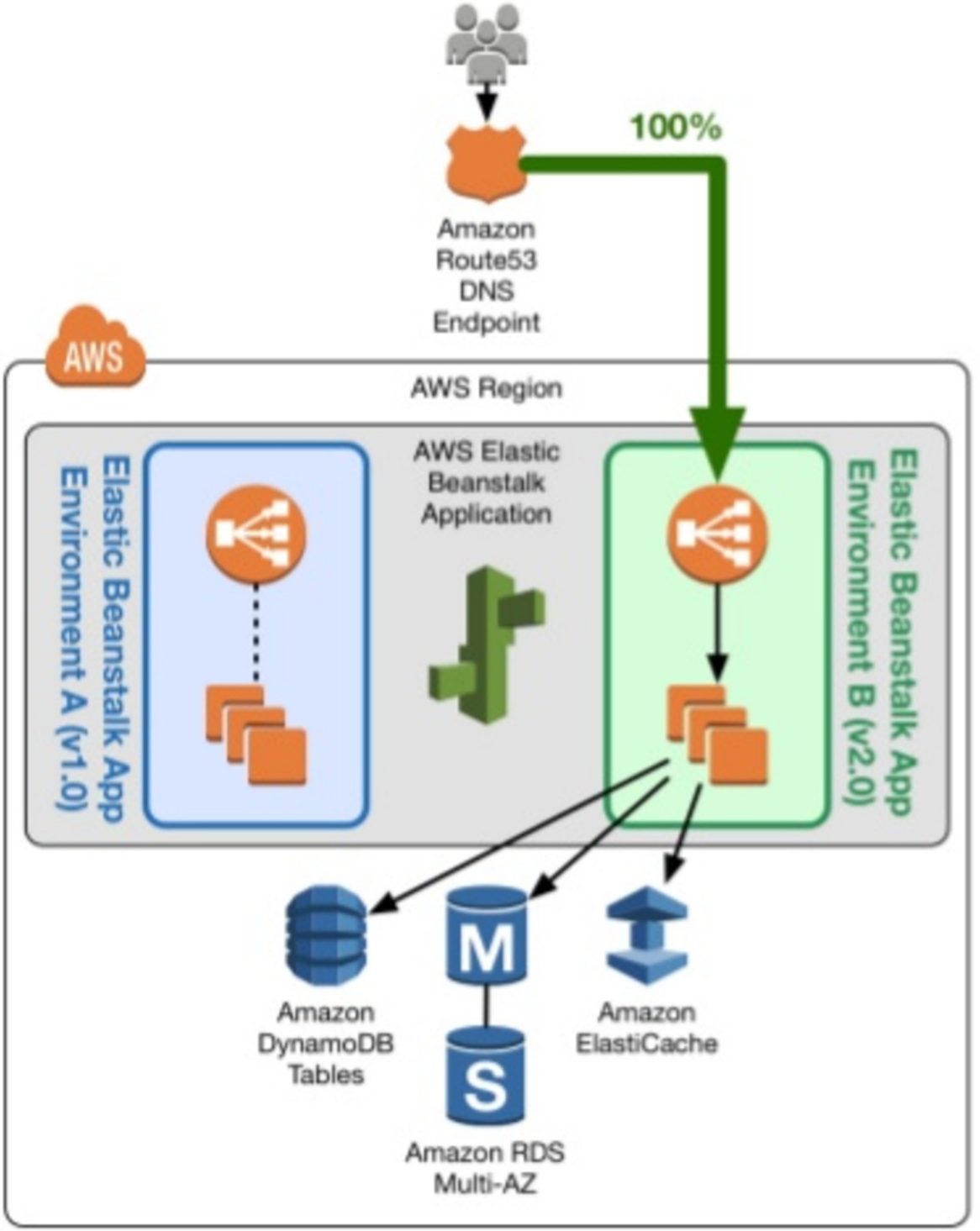
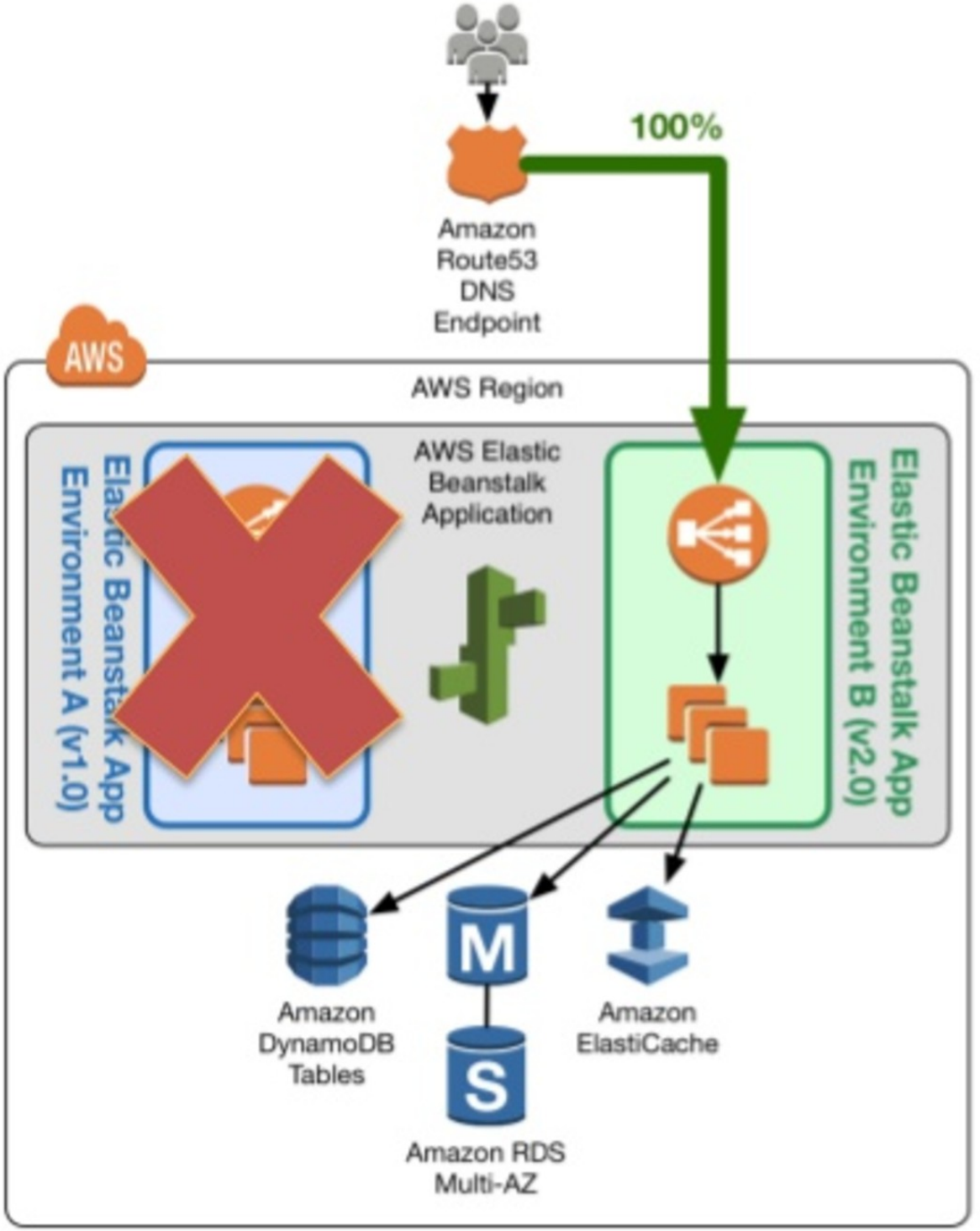

100%
Amazon
Route53
DNS
Endpoint
AWS
AWS Region
AWS Elastic
Beanstalk
Application
Elastic Beanstalk App
Environment A (v1.0)
Elastic Beanstalk App
Environment B (v2.0)
M
S
Amazon
DynamoDB
Tables
Amazon
ElastiCache
Amazon RDS
Multi-AZ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Large scale systems
Blue – Green Deployments

Issues

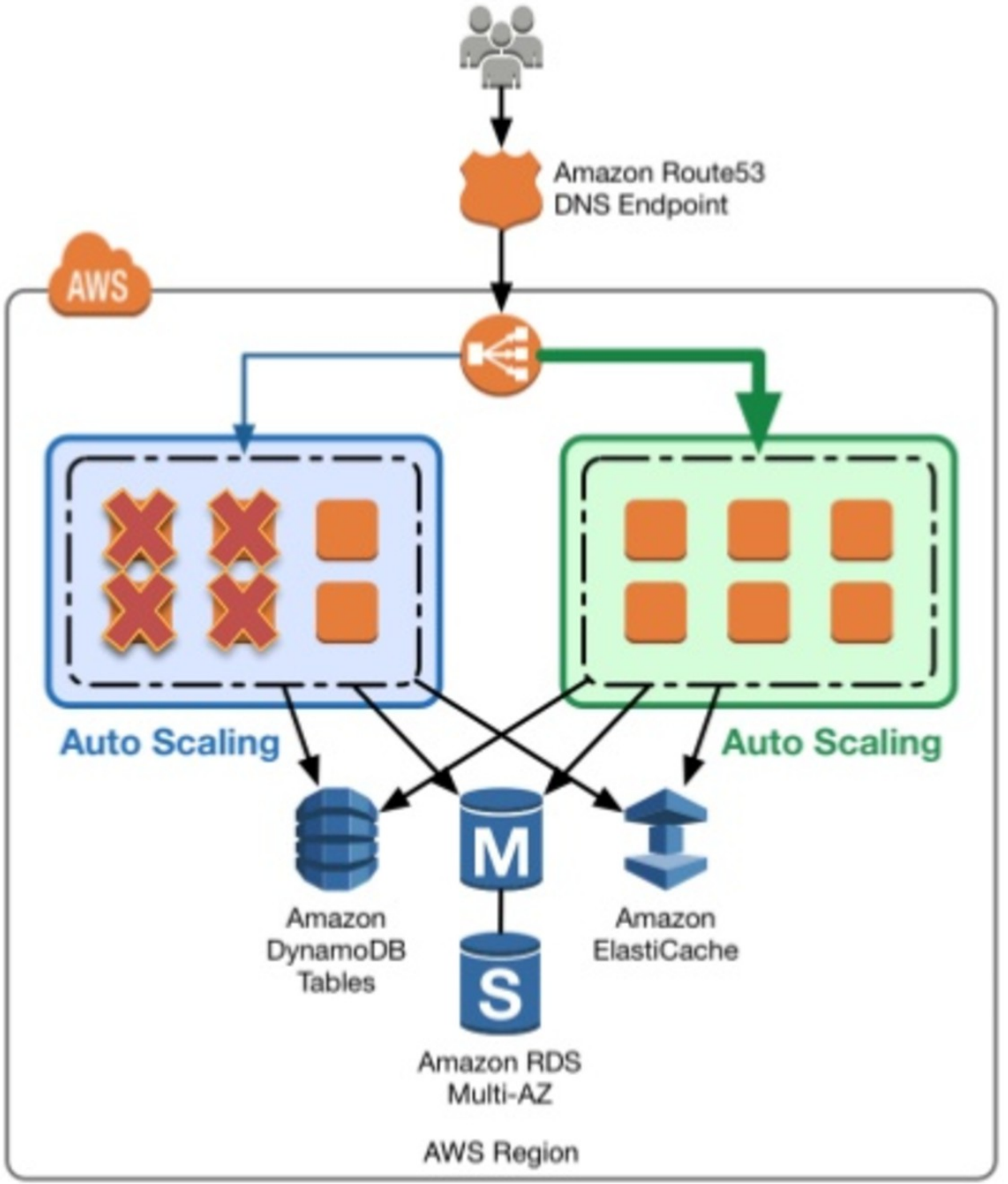
DNS lag
DNS inconsistent states

Difficult in rolling back

Large scale systems
Blue – Green Deployments

Solution

Dump DNS
Use a CANARY
Use LBs



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2016

Large scale systems
Blue – Green Deployments

Database ?

Decoupled vs Coupled

Large scale systems
Blue – Green Deployments

Database ?

Decoupled vs Coupled

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Blue – Green Deployments

Decoupled

Great things can happen
2 Approaches

New code uses old db schema
Old code use new db schema

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Coupled

Ooops
We are in trouble
Special care is needed
Deltas – On the fly sync etc

Large scale systems
Blue – Green Deployments

Why ?

Different methodology in developing
Different methodology in deploying

In general different way in doing things

THANK YOU