Making Your ColdFusion Apps Highly Available

Brian Klaas
Johns Hopkins Bloomberg School of Public Health
bklaas@jhsph.edu
@brian_klaas

JOHNS HOPKINS
BLOOMBERG
SCHOOL *of* PUBLIC HEALTH

How much downtime
can you afford?

99% = 14 minutes/day

99.9% = 1.4 minutes/day

99.99% = 8.6 seconds/day

99.999% = 1 second/day

How much availability
can you afford?

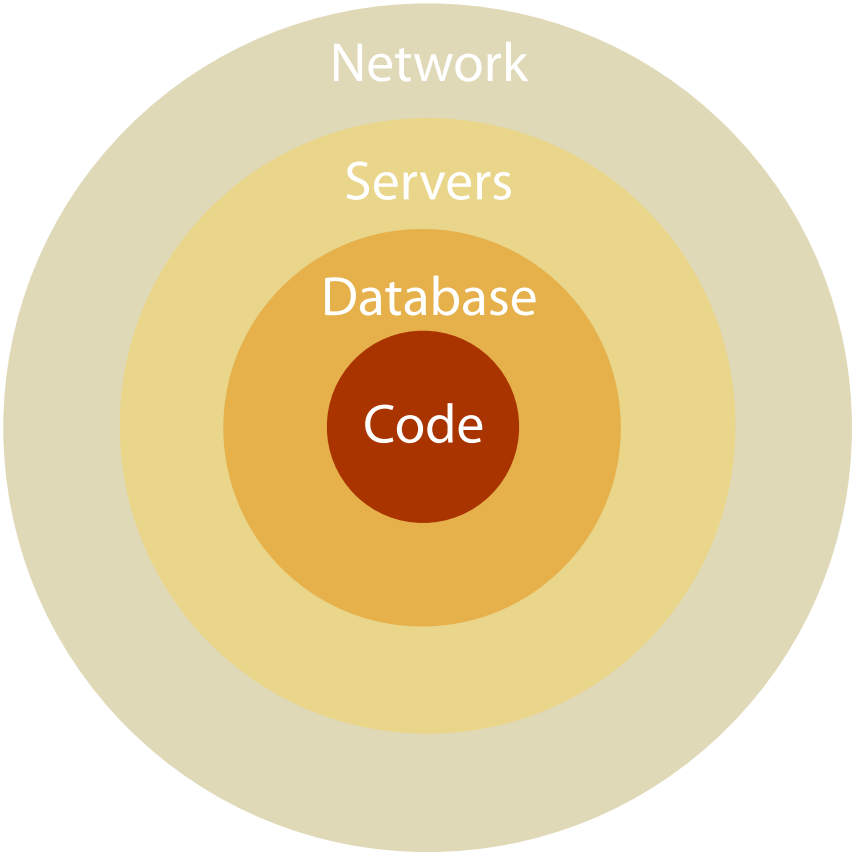
Um, hey,
I'm not Google.

Scale out

Replication + Redundancy
= Availability

Virtualization is your friend.

Changes



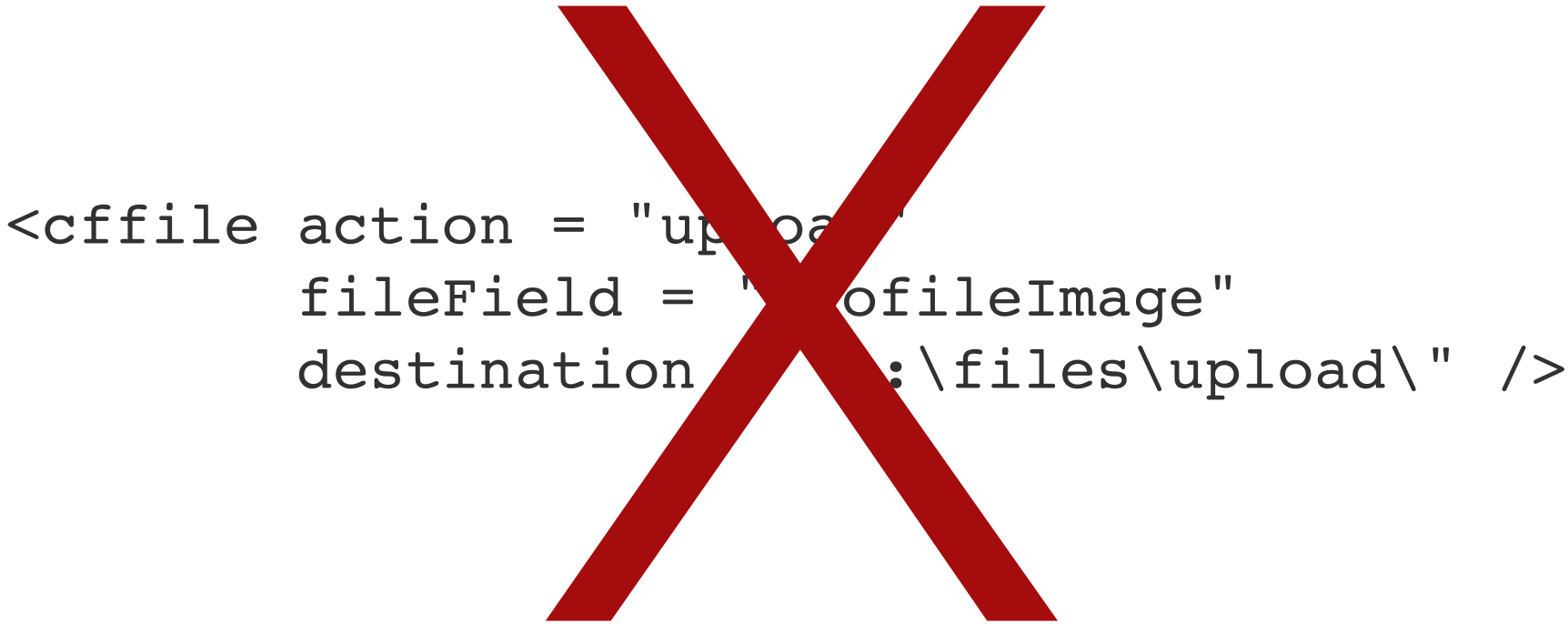
Changes to App Code


60
40
80
20
100
120
Auto Meter
MPH

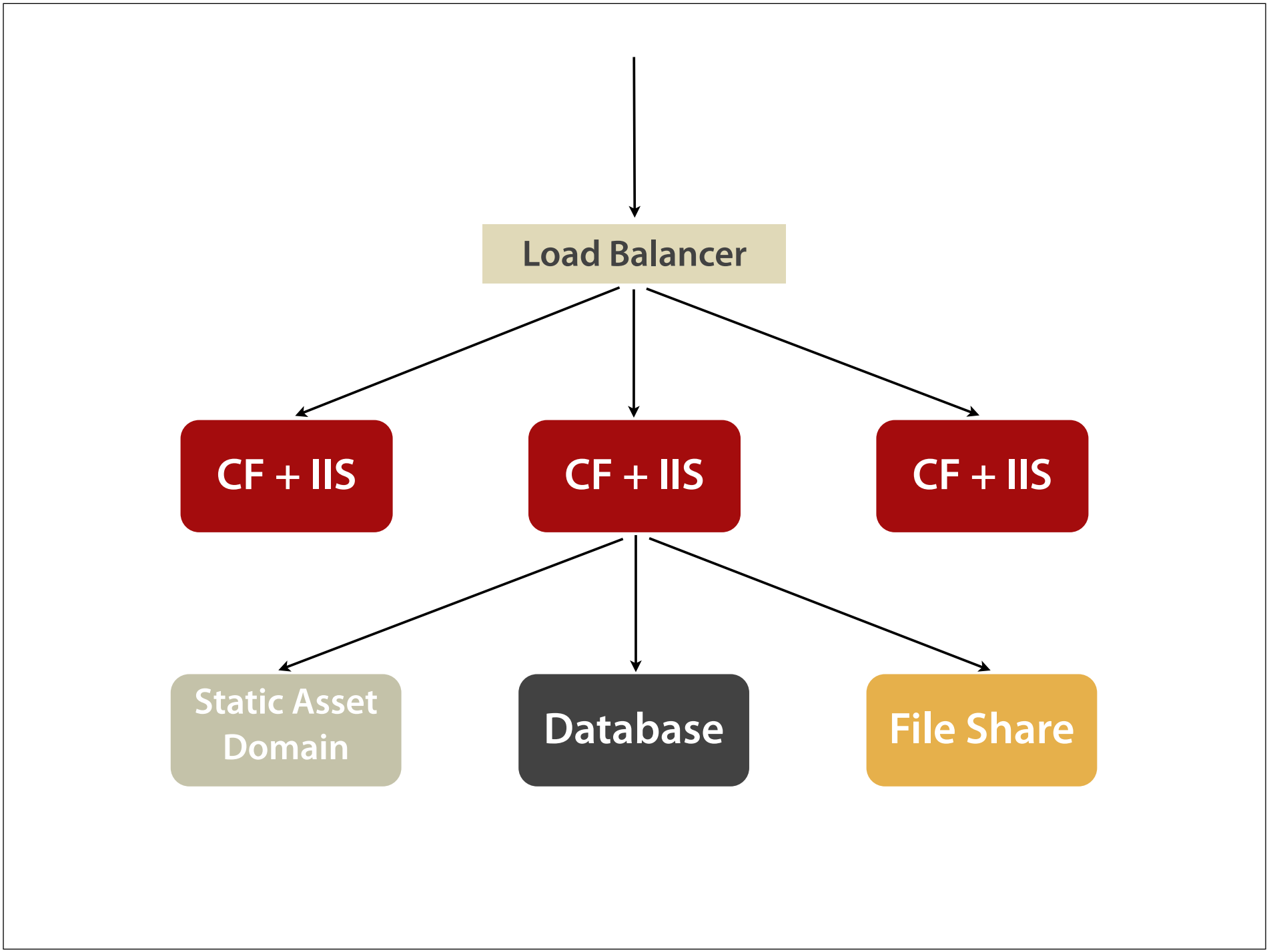
x

!=


50
60
70
40
80
30
90
20
100
10
110
0
120
MPH


<cffile action = "up oa
fileField = " ofileImage"
destination :\files\upload\" />

Use network shares
or Amazon S3.


Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset Domain
Database
File Share

```
<cfset pathToFiles = expandPath("
        /fileShareDirectory/uploads" />

<cffile action = "upload"
        fileField = "profileImage"
        destination = "#pathToFiles#" />
```

Two Tips

1. Set up mapped directory to the file share at the OS level.
2. Make sure CF has permission to access the share.

What server am I on?

Add to App Startup Code

```
<cfset var inetAddressObj = createObject("java",
"java.net.InetAddress") />

<cfset globalVars.machineName =
inetAddressObj.localhost.getCanonicalHostName() />
```

Environment Config

'Cause you're really, really, really
going to need a testing environment.

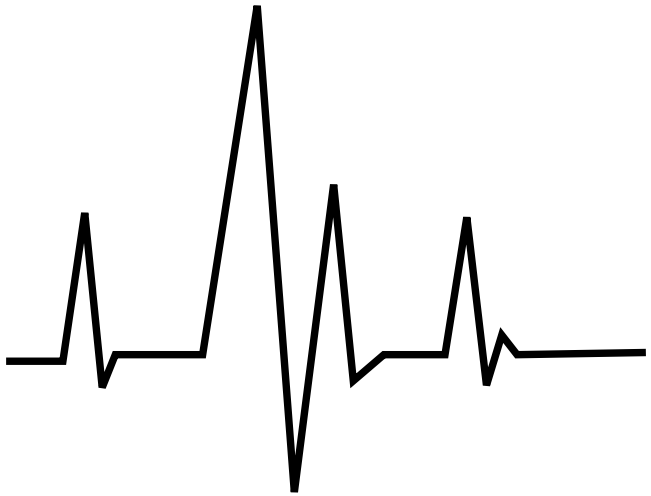
Environment Config

- Development, testing, production?
- Compare server name

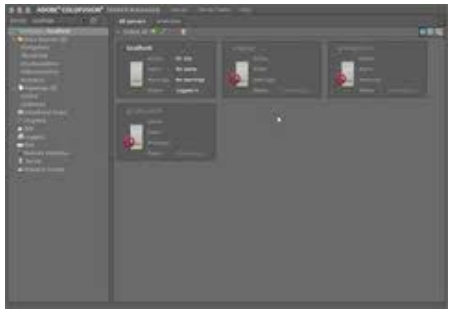
Handling Sessions

- Sticky sessions
- Database persistence
- Out-of-process or distributed cache

Basic Monitoring



fusion reactor™

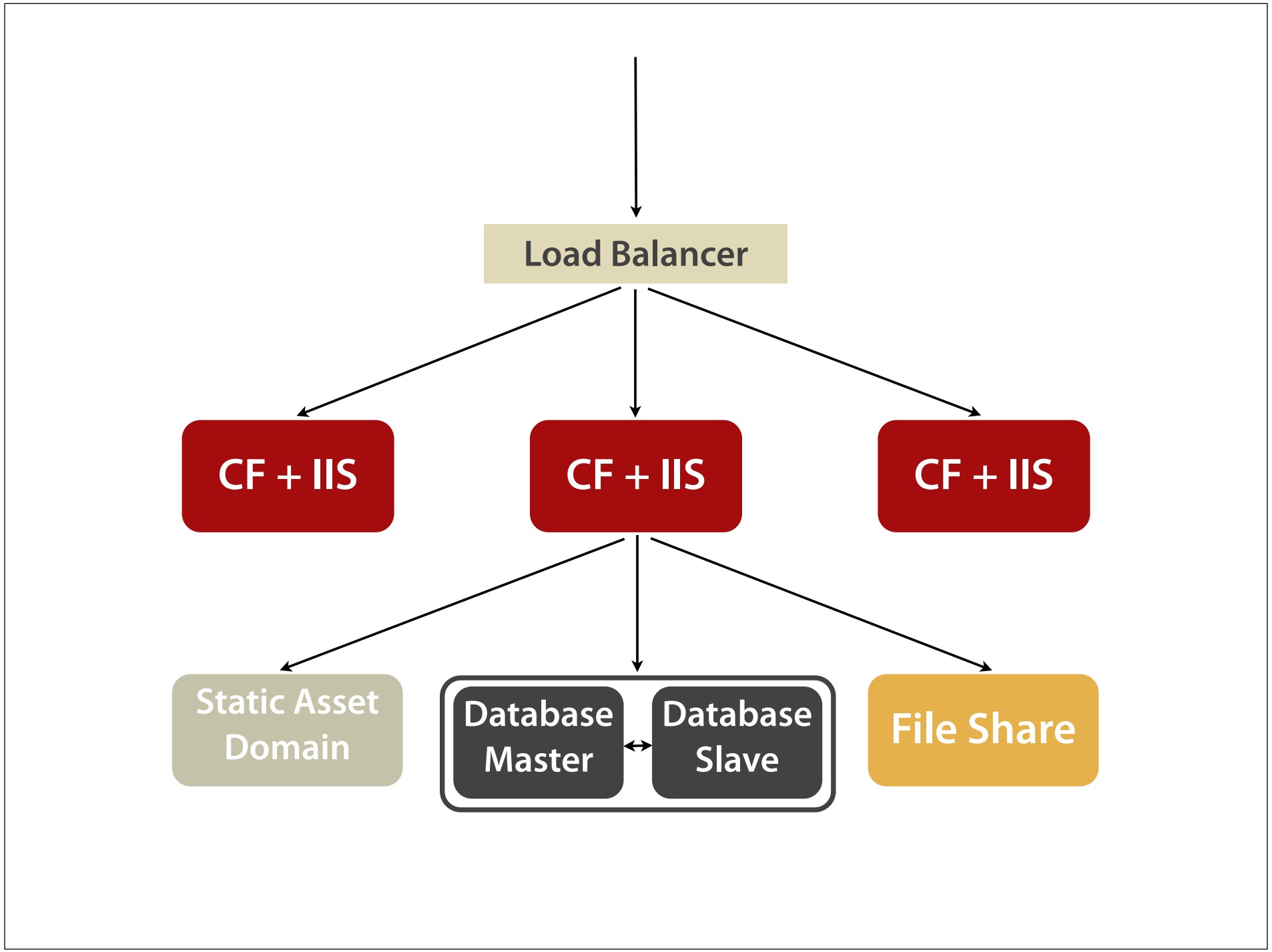


(Very) Basic Monitoring

1. Loop through list of servers to check
2. Make <cfhttp> call to a “heartbeat” event on each
3. Result = error, send an email/SMS alert

Changes to Database Setup

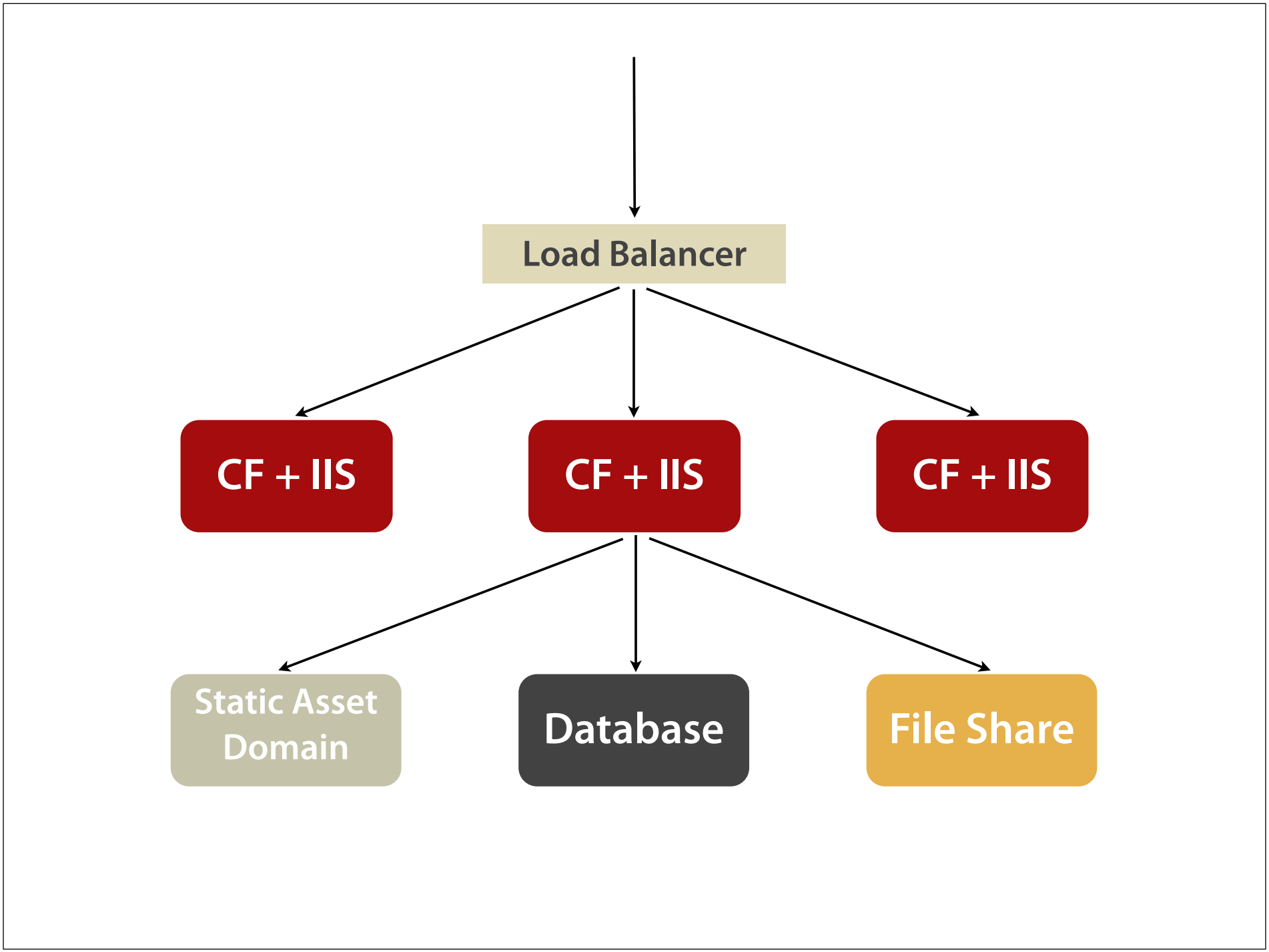
Replicate

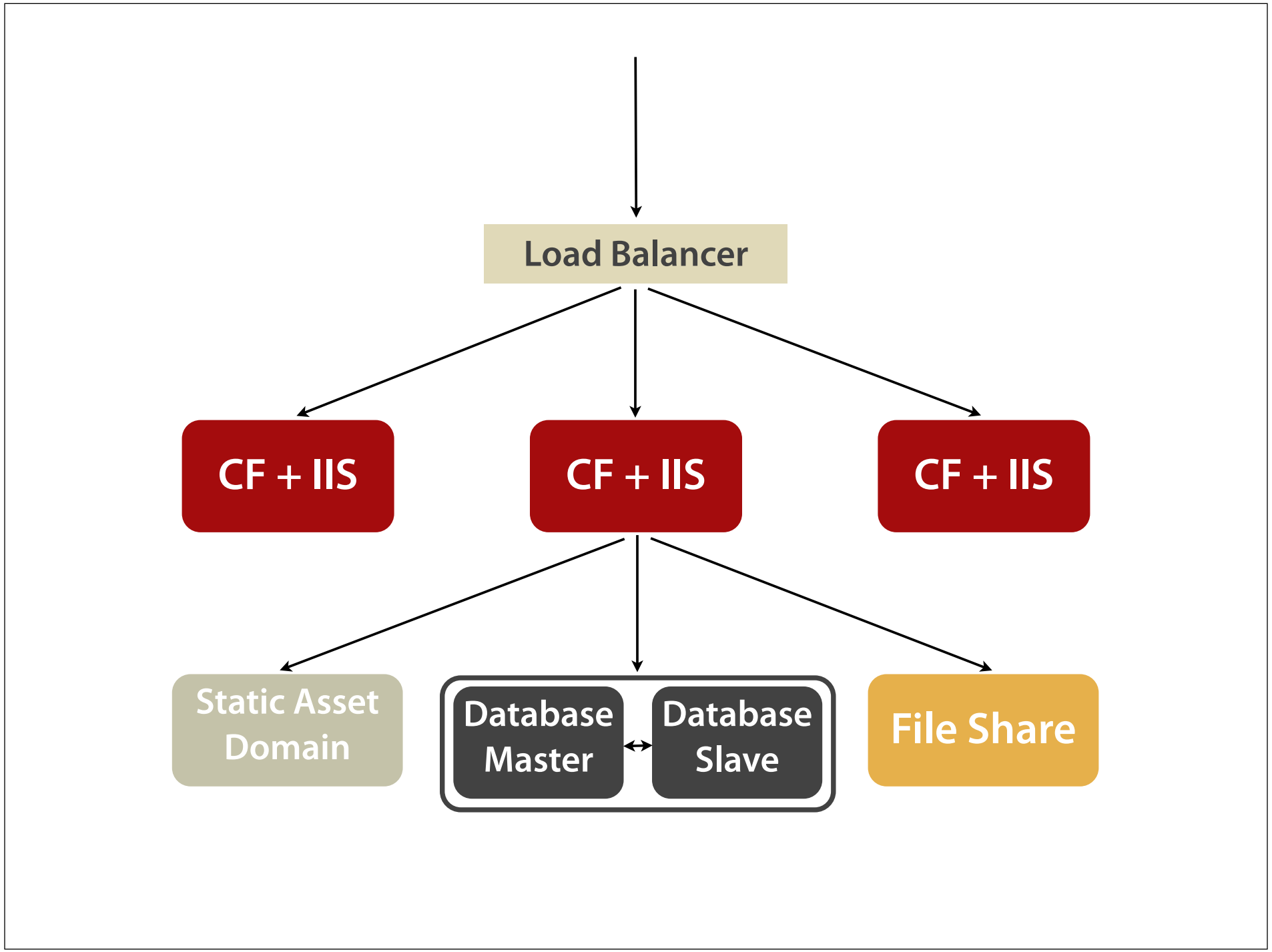

Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset Domain
Database Master
Database Slave
File Share

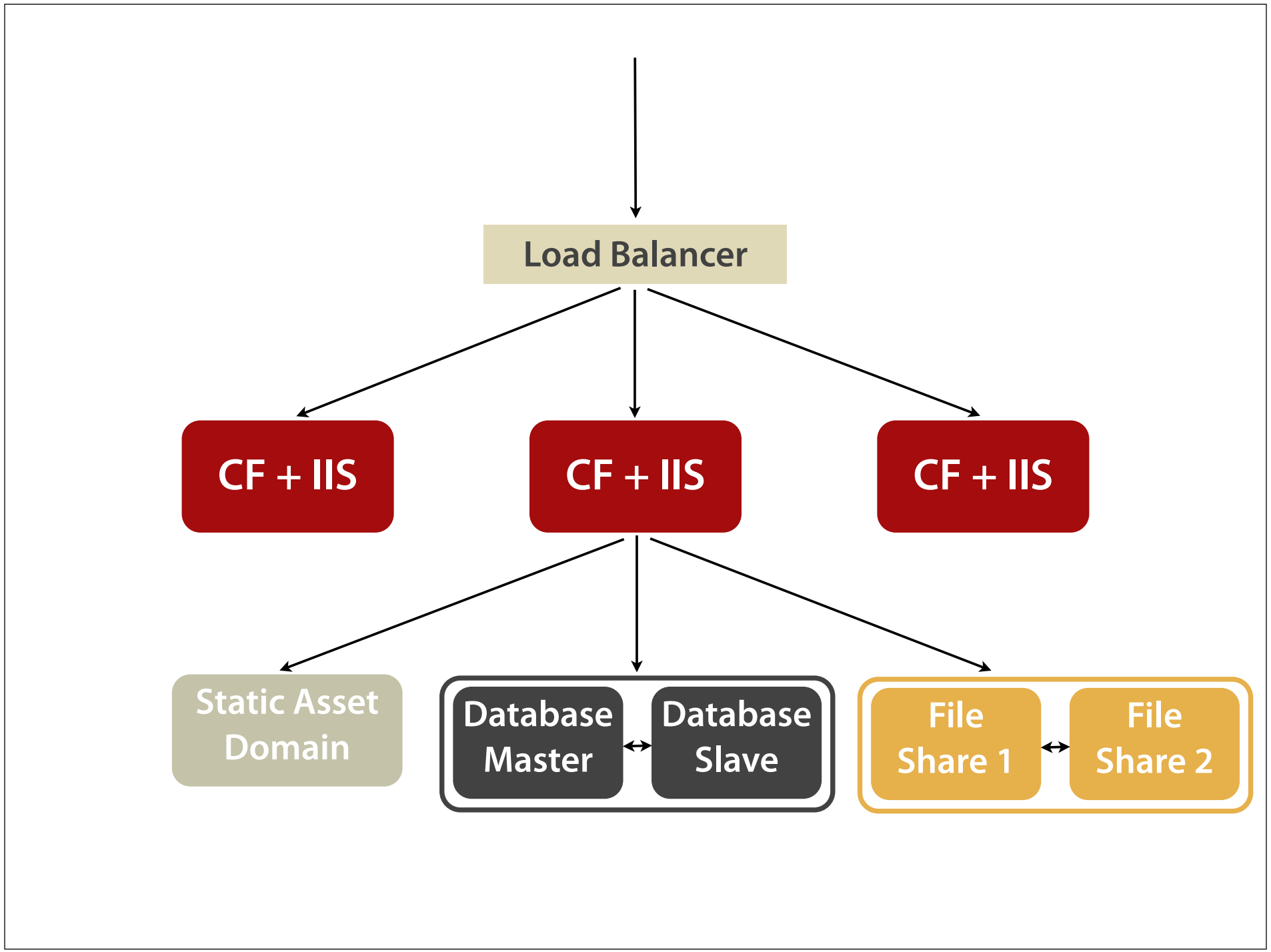
Distributed Databases

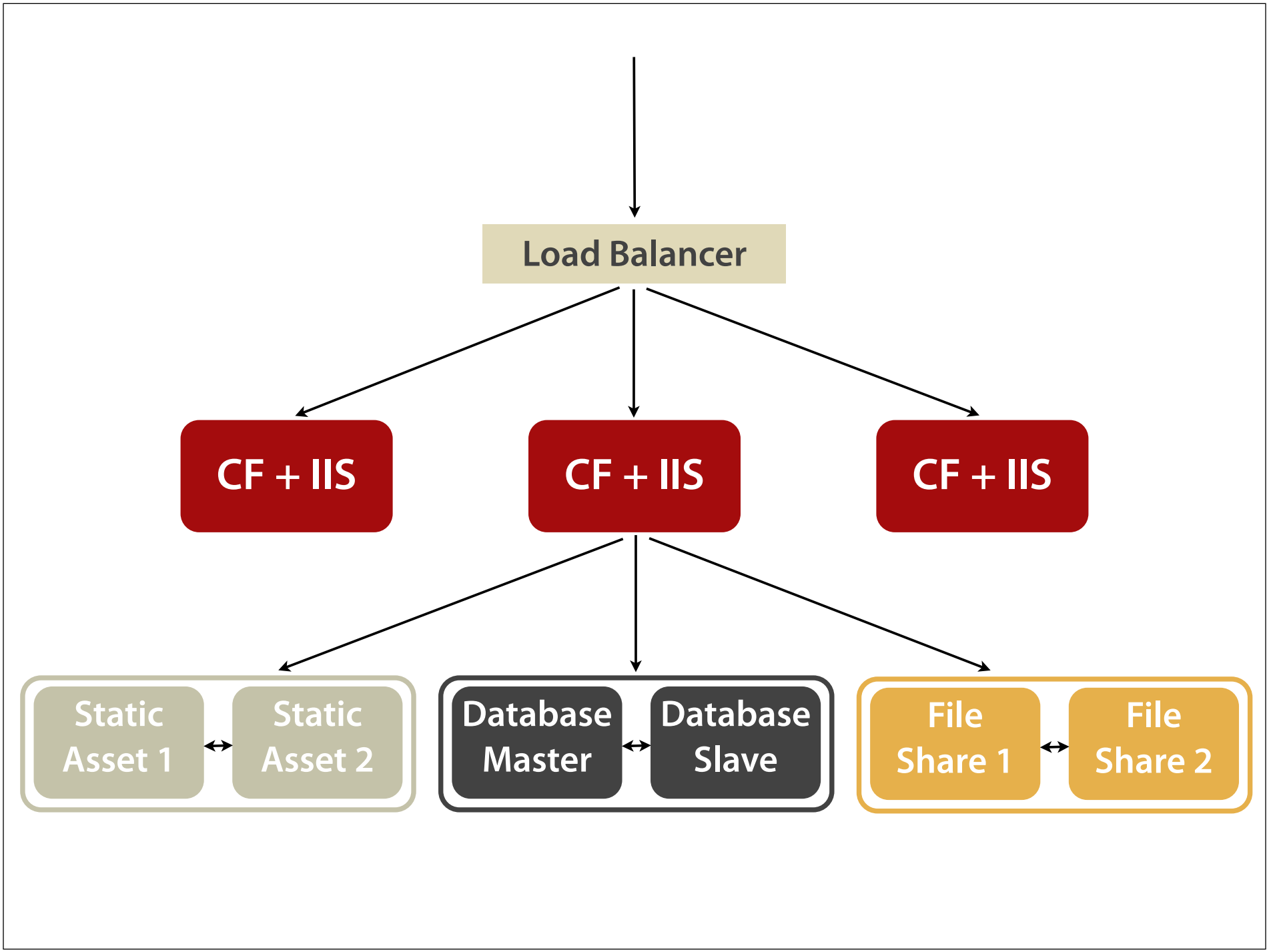
eep

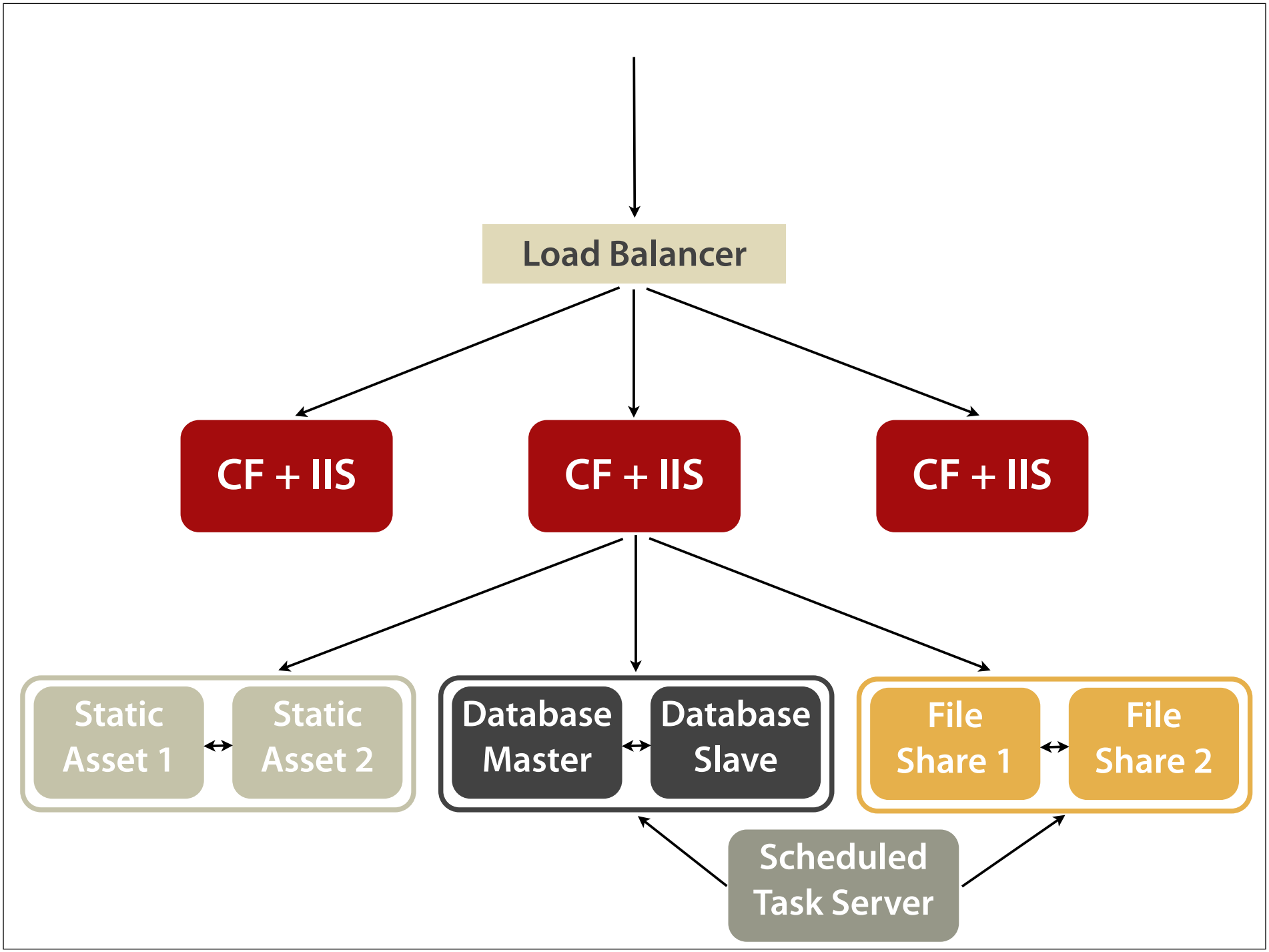
Changes to Server Config

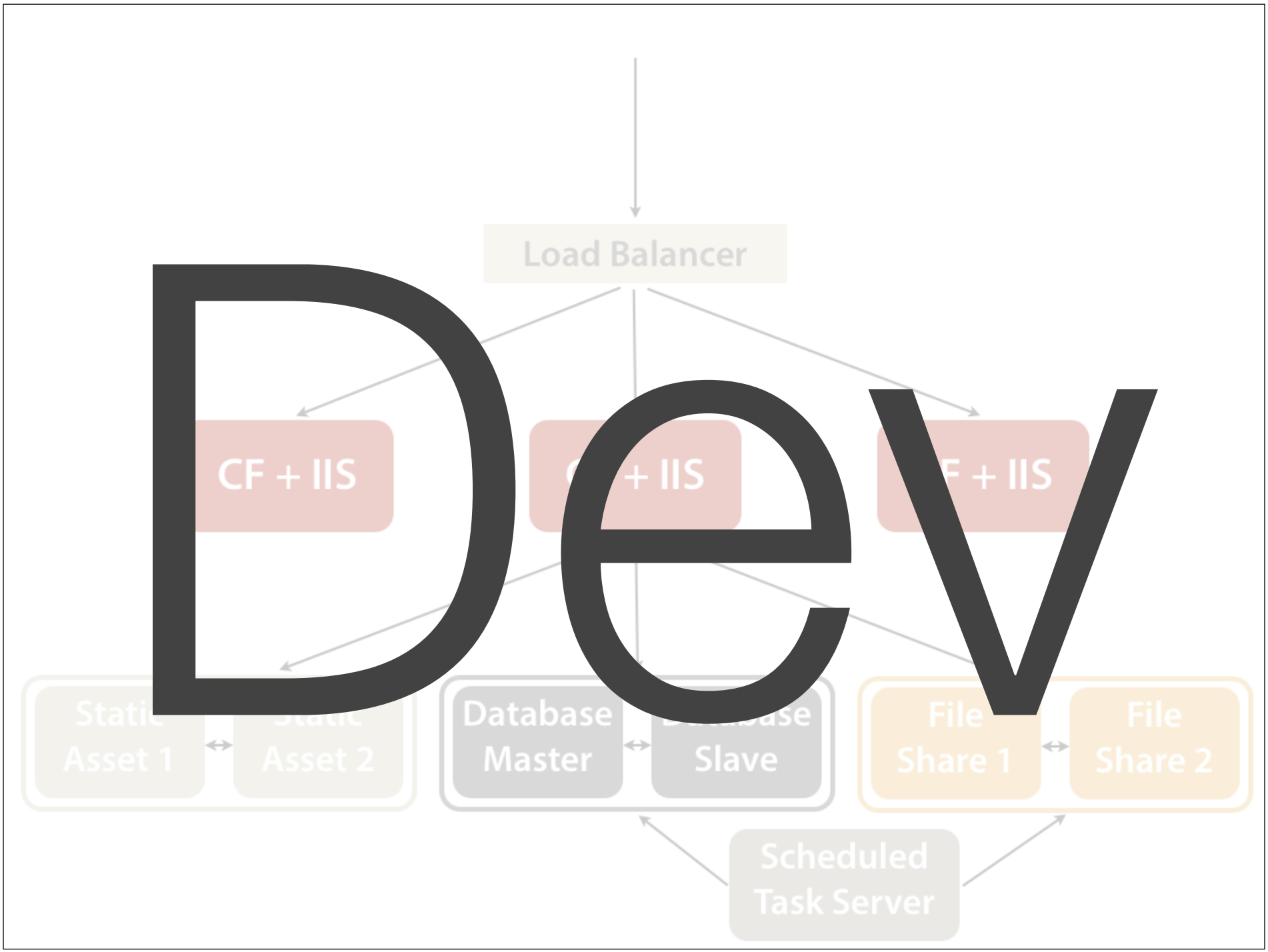

Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset Domain
Database
File Share


Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset Domain
Database Master
Database Slave
File Share

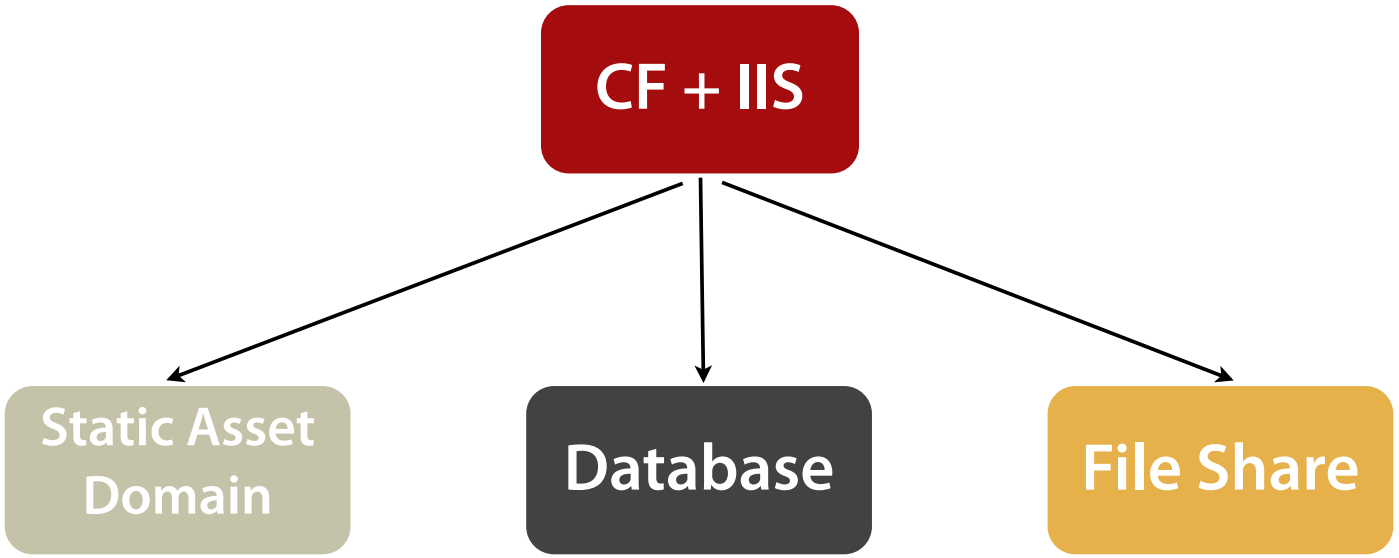

Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset Domain
Database Master
Database Slave
File Share 1
File Share 2


Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset 1
Static Asset 2
Database Master
Database Slave
File Share 1
File Share 2


Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset 1
Static Asset 2
Database Master
Database Slave
File Share 1
File Share 2
Scheduled Task Server


Load Balancer
CF + IIS
Database
Master
File
Share 1
File
Share 2
Scheduled
Task Server
Dev

Dev



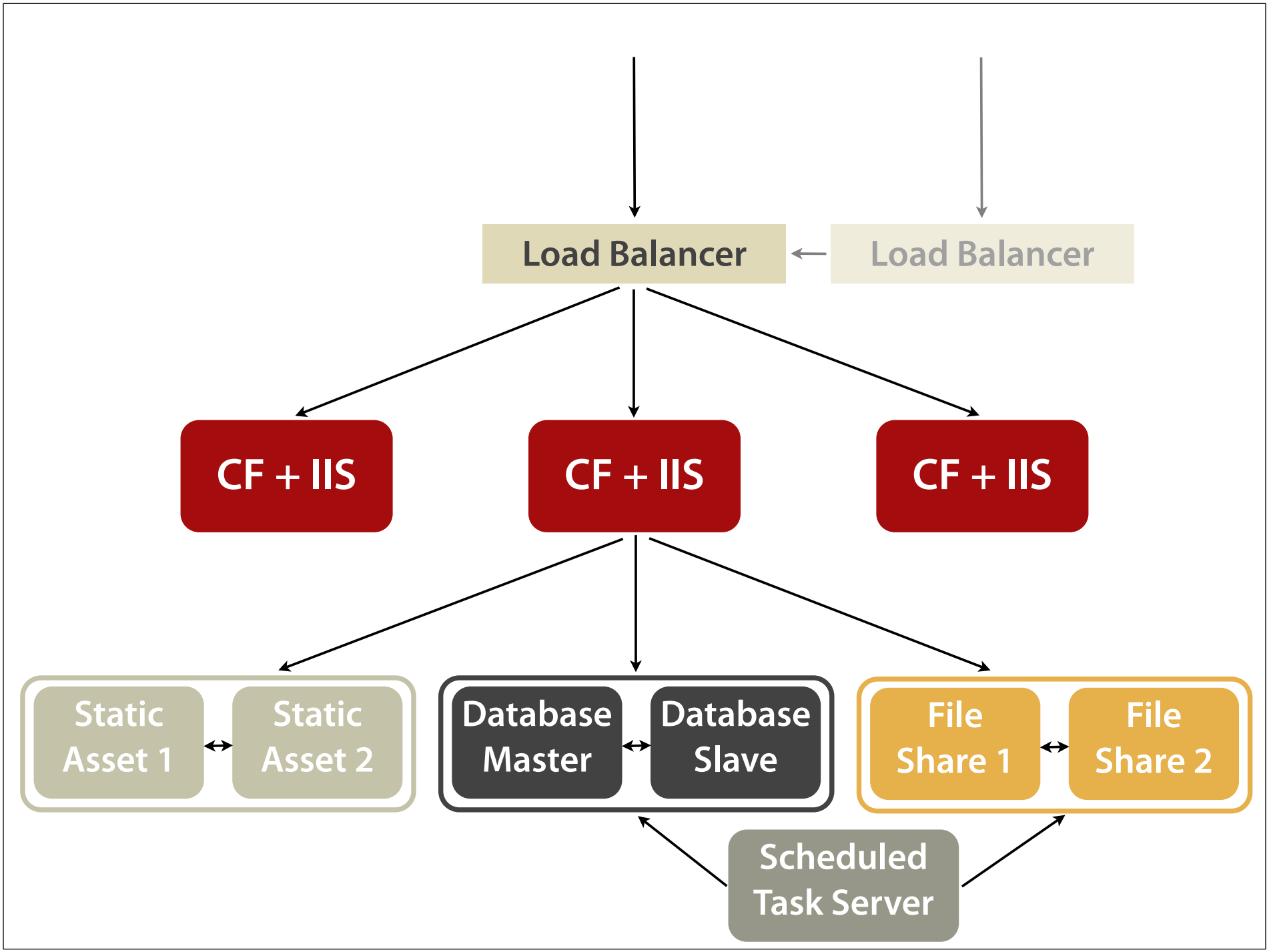
What's your patch strategy?

yymkw@Flickr

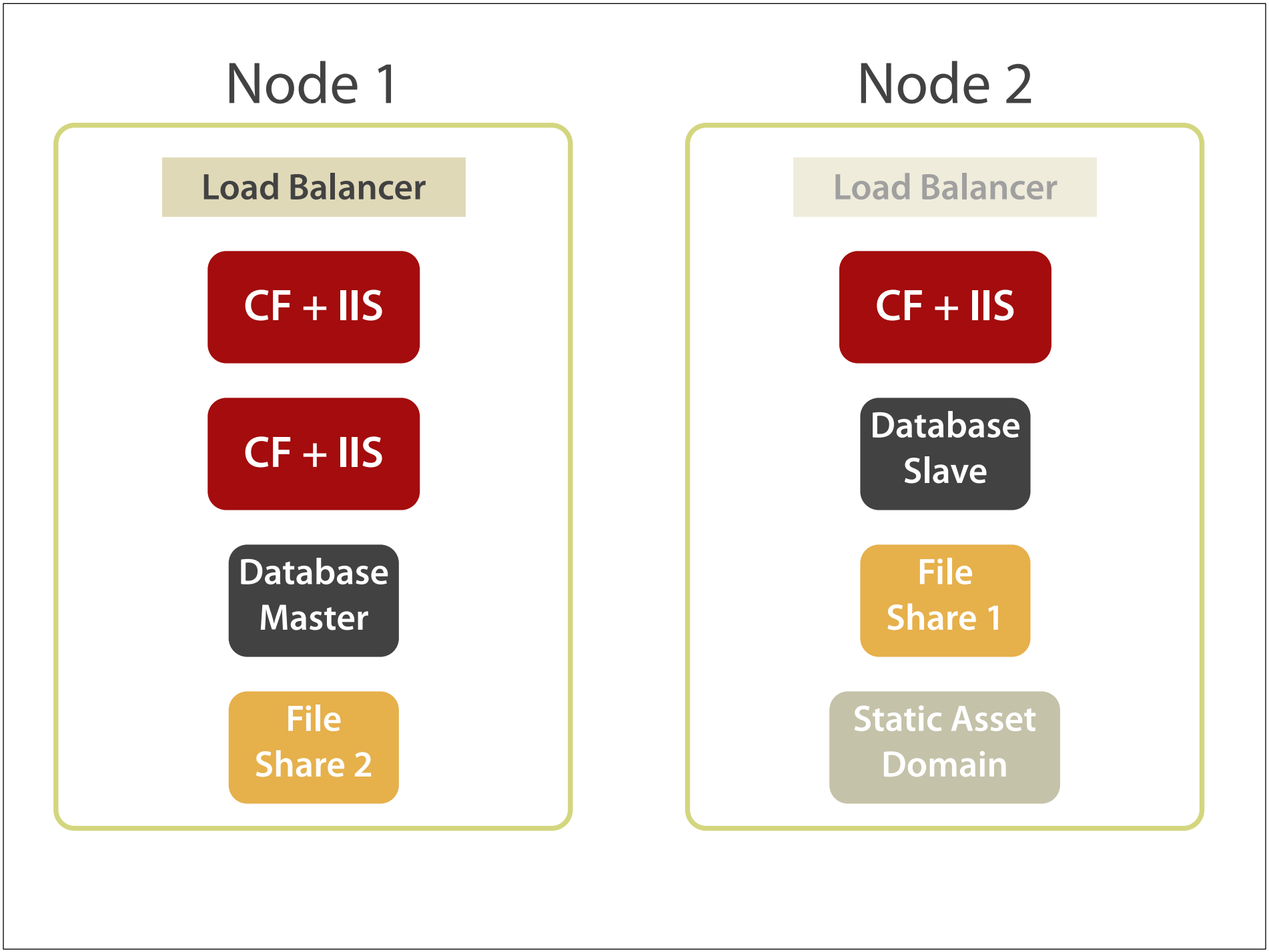
How do I get code there?

FTP Ant Jenkins Chef Puppet

Changes to the Network


Load Balancer
Load Balancer
CF + IIS
CF + IIS
CF + IIS
Static Asset 1
Static Asset 2
Database Master
Database Slave
File Share 1
File Share 2
Scheduled Task Server

And what if the metal blows up?


Node 1
Load Balancer
CF + IIS
CF + IIS
Database Master
File Share 2
Node 2
Load Balancer
CF + IIS
Database Slave
File Share 1
Static Asset Domain

And what if the data center blows up?

Considering AWS*

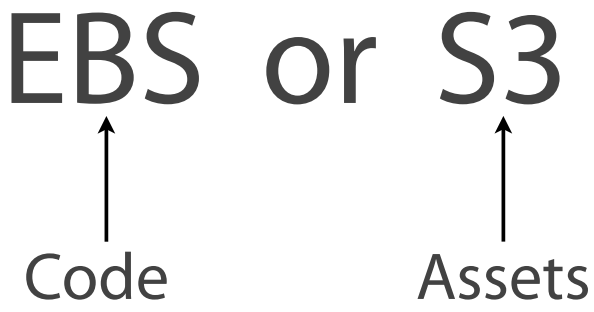
* Applies to other cloud service providers too.

AWS* = unlimited virtualized servers in data centers around the globe.

* And friends.

EC2

AMI on EC2


EBS or S3
Code
Assets

Databases:

Your own

EC2 + EBS

Amazon RDS

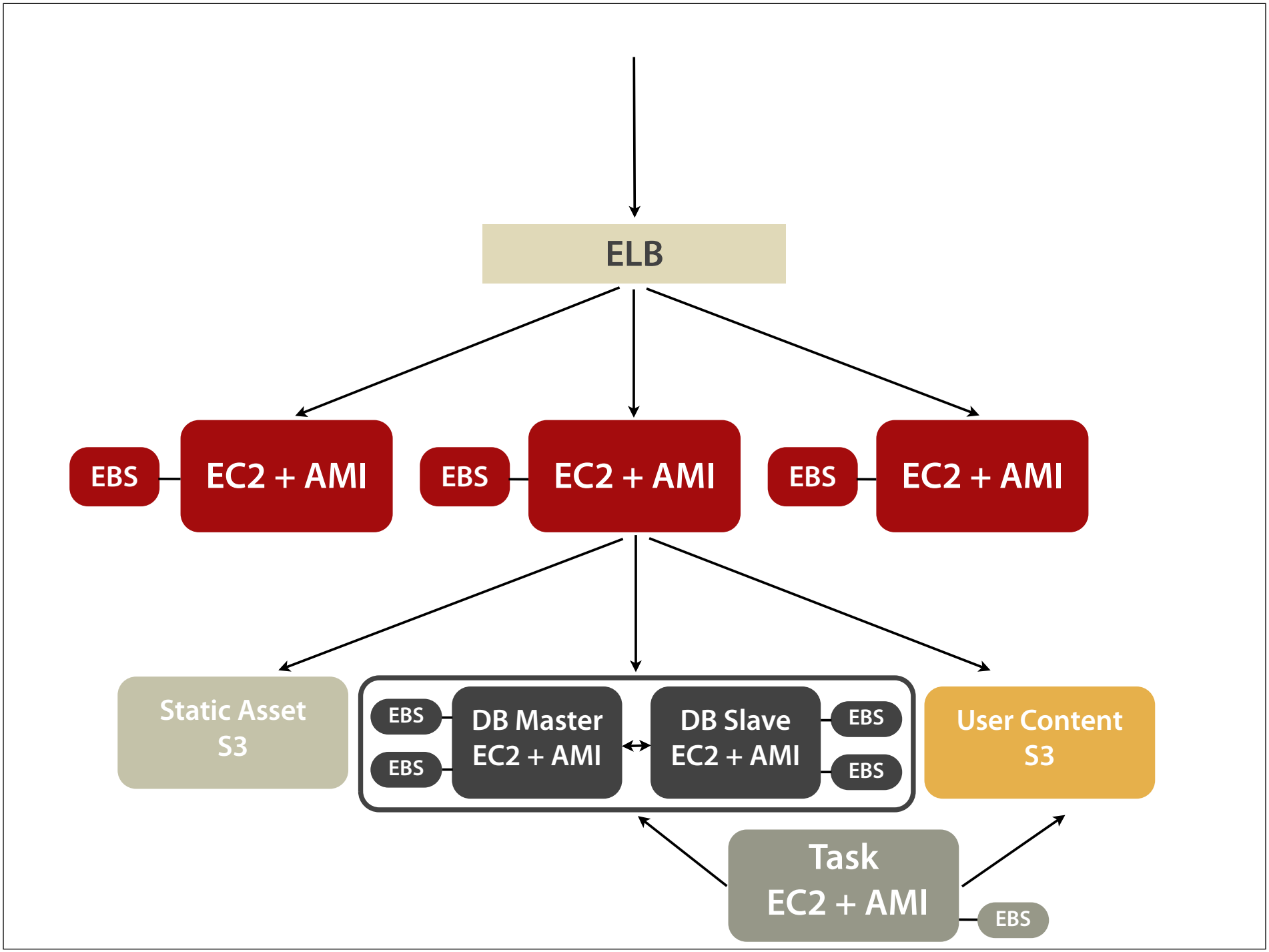
MySQL
Oracle
MS SQL Server

NoSQL DB

MongoDB
Cassandra
CouchDB
Riak
Redis

AZ Dynamo DB
AZ Simple DB

ELB


ELB
EBS
EC2 + AMI
EBS
EC2 + AMI
EBS
EC2 + AMI
Static Asset
S3
EBS
EBS
DB Master
EC2 + AMI
DB Slave
EC2 + AMI
EBS
EBS
User Content
S3
Task
EC2 + AMI
EBS

IOPS

Cache, cache, cache.

Everything fails.

You are responsible for redundancy.

Autoscale.

CloudWatch

Elastic Beanstalk

Or another PaaS provider.

Use multiple availability zones.

Region = data center around the globe
Availability zone = segment of a data center

Uh, so is it worth it?

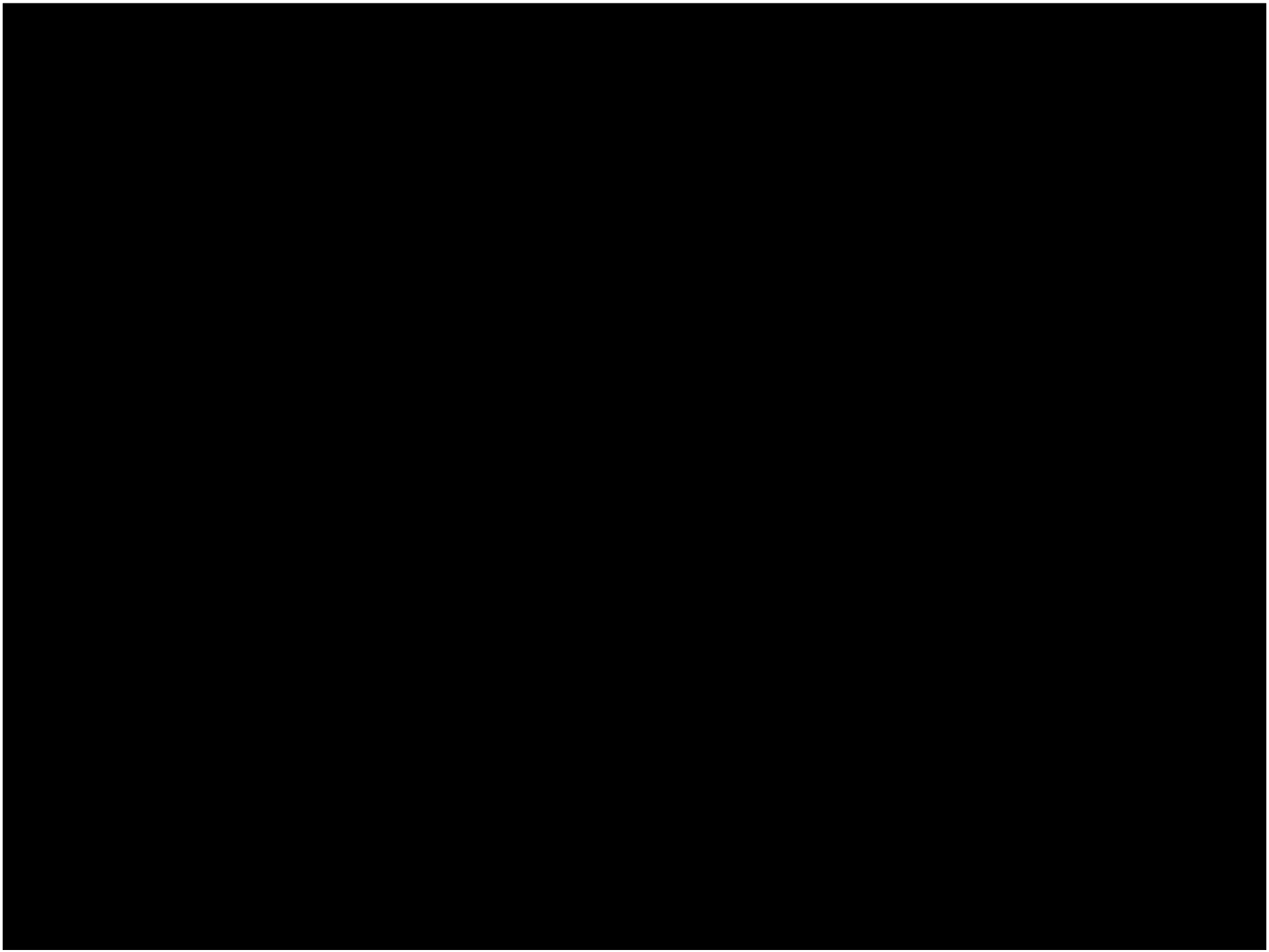
Meta–Network Availability


Go Daddy®
.COM

How much availability
can you afford?

Thank you!

Brian Klaas
Johns Hopkins Bloomberg School of Public Health
bklaas@jhsph.edu
@brian_klaas
www.iterateme.com



Resources

- Amazon AWS
  aws.amazon.com
- Amazon Elastic Compute Cloud
  aws.amazon.com/ec2/
- Amazon Machine Images
  aws.amazon.com/amis/
- Amazon Elastic Block Storage
  aws.amazon.com/ebs/
- Amazon Simple Storage Service (S3)
  aws.amazon.com/s3/

Resources

- Amazon Relational Database Service
  aws.amazon.com/rds/
- Amazon Elastic Load Balancing
  aws.amazon.com/elasticloadbalancing/
- Amazon Elastic Beanstalk (Autoscaling)
  aws.amazon.com/elasticbeanstalk/
- Amazon ElastiCache
  aws.amazon.com/elasticache/
- Amazon DynamoDB (NoSQL Service)
  aws.amazon.com/dynamodb/

Resources

- Amazon Route 53 (DNS Service)
  aws.amazon.com/route53/
- Amazon Autoscale
  aws.amazon.com/autoscale/
- The Official Word on CF10 Licensing Changes
  blogs.coldfusion.com/post.cfm/coldfusion-10-eula
- Jelastic (PaaS Vendor that Supports ColdFusion)
  jelastic.com
- Netflix's Chaos Monkey
  github.com/Netflix/SimianArmy

Resources

- Apache ANT
  ant.apache.org
- Puppet
  puppetlabs.com
- Chef
  www.opscode.com/chef/
- FusionReactor
  www.fusion-reactor.com
- Database Sharding
  www.codefutures.com/database-sharding/