



Cloud Computing with Amazon Web Services and the DevOps Methodology

Who am I?

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Systems Developer at Cloudreach

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Who are Cloudeach?

- Multi-platform cloud integrator for the enterprise.
- Top tier partner with
 - Amazon Web Services
 - Google
 - Heroku
 - Salesforce

 News International

funkypigeon.com

Kempinski
HOTELS & RESORTS

FT

CAPCO



BELRON

petroceltic

FINANCIAL
TIMES


ChipsAway
We paint the chips - not the car

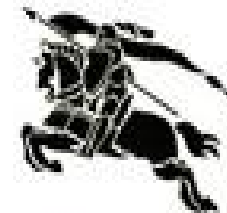
BK
BELLVILLE RODAIR

SCREWFIX

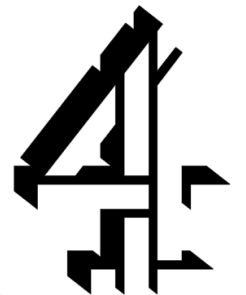
BARR

IRN-BRU

shop
direct
group



BURBERRY

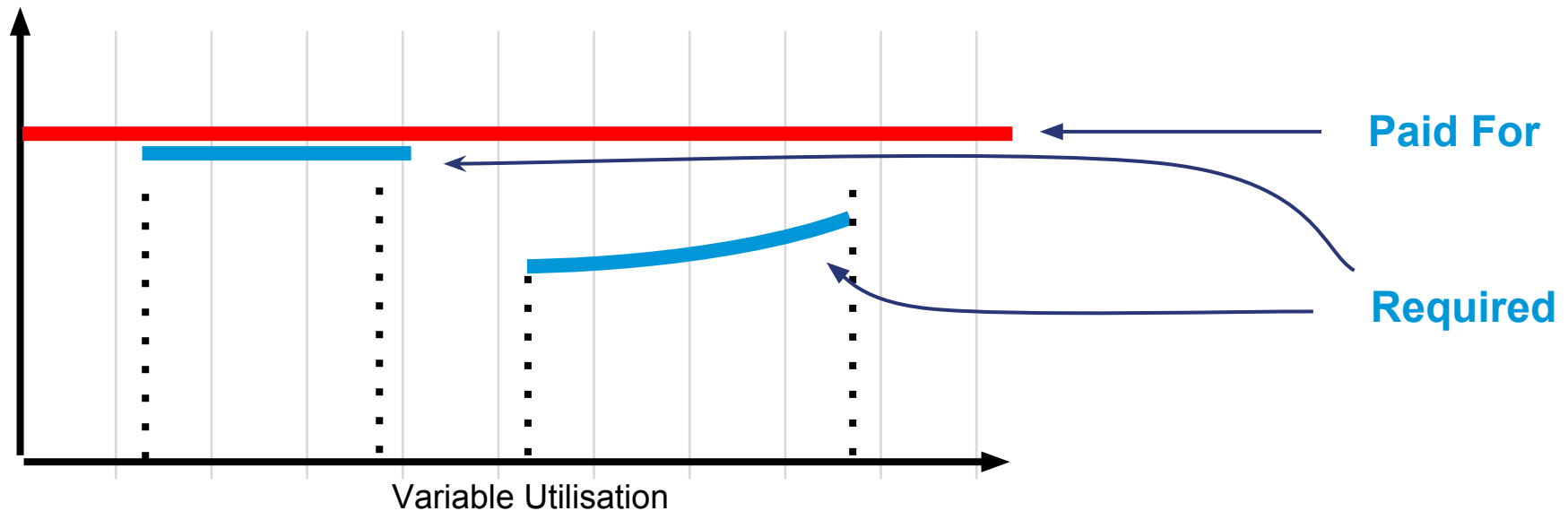


What do Cloudeach do?

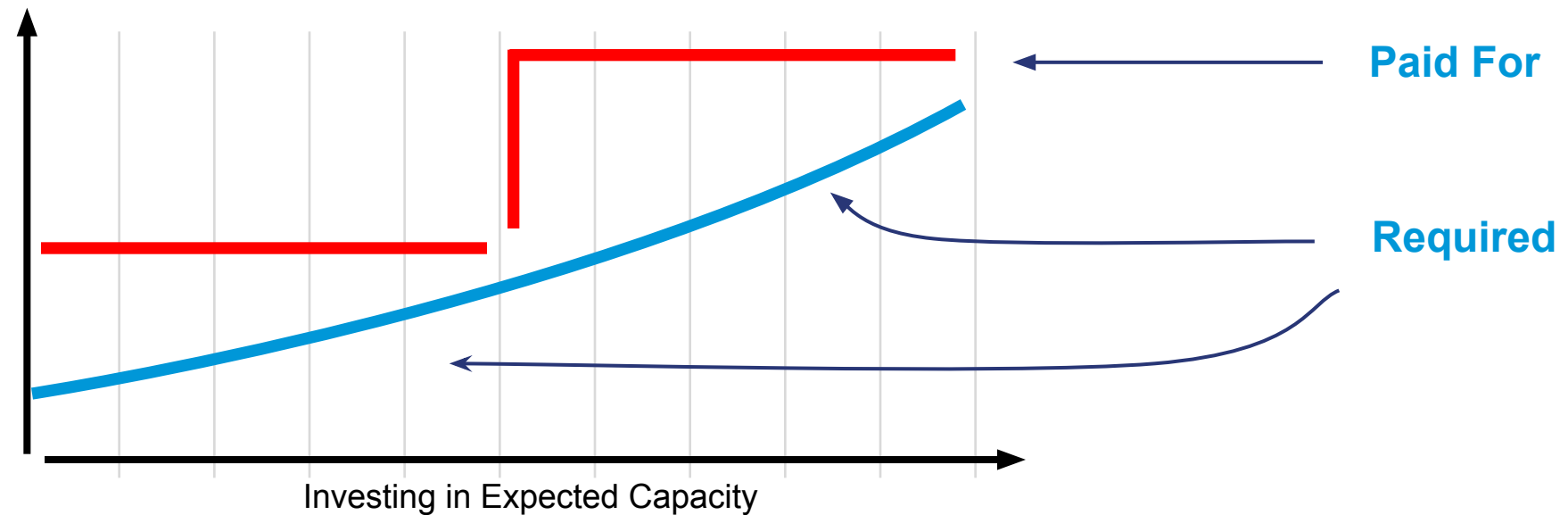
- Consultancy Services
- Migration Services
 - Moving platforms to the cloud
 - Migrating business to Google Apps
- Application Development
 - Mobile development - Android/iOS
 - Salesforce integration
- Managed Services
 - 24/7 Monitoring
 - Break/Fix
 - Business As Usual / Keeping lights on

- Amazon Web Services
 - Cloud computing platform
- Chef
 - Configuration management
- Splunk
 - Data collection
 - "Big data" Analytics
- Zenoss
 - Monitoring and alerting
- Jira
 - "Agile" issue tracker & team management

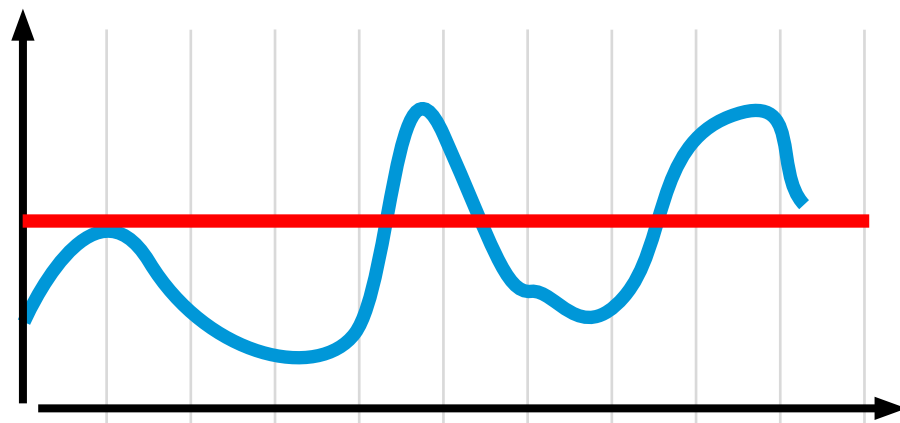
What is Cloud Computing?



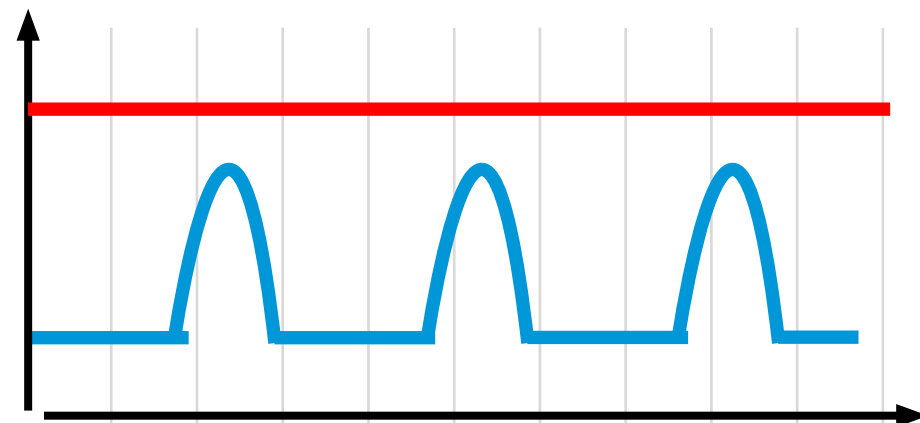
- Traditionally pay for fixed capacity
 - VPS / co-location
 - Not always on
 - Underutilised



- Traditionally pay for fixed capacity
 - Stepwise expansion
 - Underutilised



Unexpected Peaks



Expected Peaks

- Traditionally pay for fixed capacity
 - Underprovisioned
 - Lost revenue at peaks
 - Overprovisioned
 - Underutilised

Wouldn't it be nice if the red line more closely followed the blue line?

With the cloud and Amazon Web Services, it can; and you only pay for what you use.

- Traditional infrastructure
 - Physical racks in data centres
 - Manually replace faulty hardware
 - Scaling up
 - Provision and install new hardware
 - Scaling down!?

- Elasticity
 - Scale up in response to spikes
 - Scale down afterwards
 - No CapEx
 - Pay as you go

- Elasticity
 - Disk space on demand
 - Networking on demand
 - CPU on demand
 - RAM on demand

- Virtualised infrastructure
- Abstracted hardware detail
- Still need physical hardware
- Managed reliably by someone else

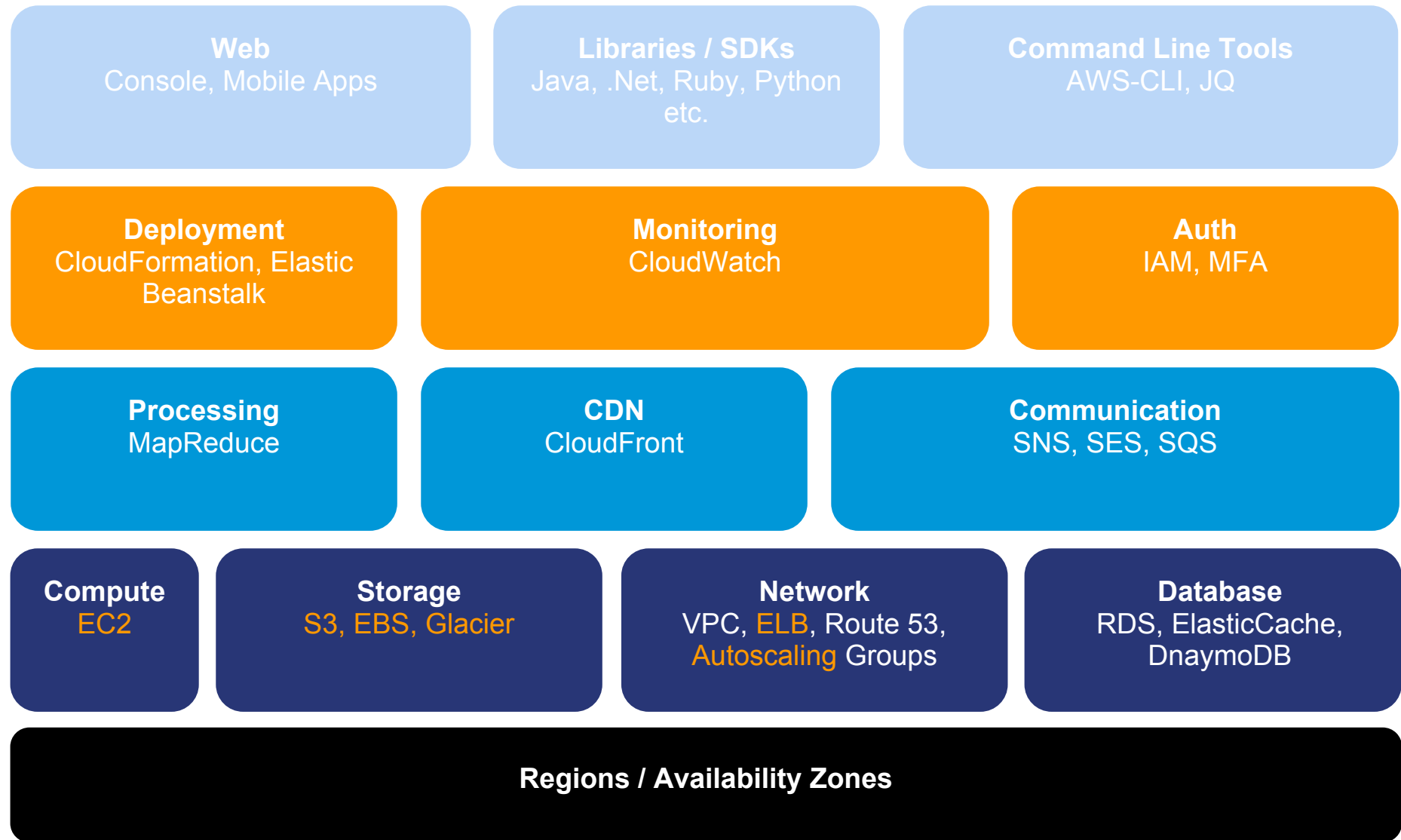
- Agile
 - Try new things without heavy investment
 - Scrap ideas without significant overhead.
- "Just In Time"
 - Expecting increased traffic, spin up new temporary resource.
- Typically HTTP API to cloud resources

- X as a Service
 - Application
 - Infrastructure
 - Platform
 - Network
 - Storage
 - Database
 - Etc.

Amazon Web Services

- Amazon.com not just a retailer
- Amazon.com built on top of AWS
- Built to be resilient
- Geographic diversity

- Multiple interfaces to API
 - Command line tools
 - HTTP API
 - Web Console
 - SDKs (Ruby, Java, Python etc.)



- Regions
 - us-east-1, us-west-1, us-west-2
- Availability Zones
 - eu-west-1a, eu-west-1b
 - Diverse network, bandwidth
 - Isolated from other AZs

Elastic Compute Cloud (EC2)

- On demand compute power
- Basically a Virtual Machine with extras
- Based on AMIs
- Different instance sizes
 - Micro ~ 512Mb RAM, 1 CPU
 - Cluster 8 XL ~ 244Gb RAM, 88 CPU
- Boot a new instance in minutes
- Public DNS and IP address

- Choice of OS
 - Linux, Windows, FreeBSD, OpenSolaris
- CloudWatch monitoring
- Snapshots / Backups
- Build AMIs for VM templates
- Choice of pricing model
 - On Demand, Reserved, Spot

Storage Solutions (EBS, S3, Glacier)

- Elastic Block Store
 - Analogous to traditional hard disks
 - Commonly used as primary instance storage
 - Block level device access

- Simple Storage Service
 - Geographically distributed for redundancy
 - Can be used in conjunction with Route 53 to host static sites!
 - Useful for backup purposes
 - Currently > 1.3Tn objects

• Glacier

- Very low storage cost
- Designed for infrequent retrieval
- Retrieval time of several hours
- Not for servicing real time requests
- Long term backup solution e.g. for data retention compliance

Elastic Load Balancer (ELB)

- Distribute load across many back-end instances
- Multiple AZ support
- Complemented by Autoscale Groups

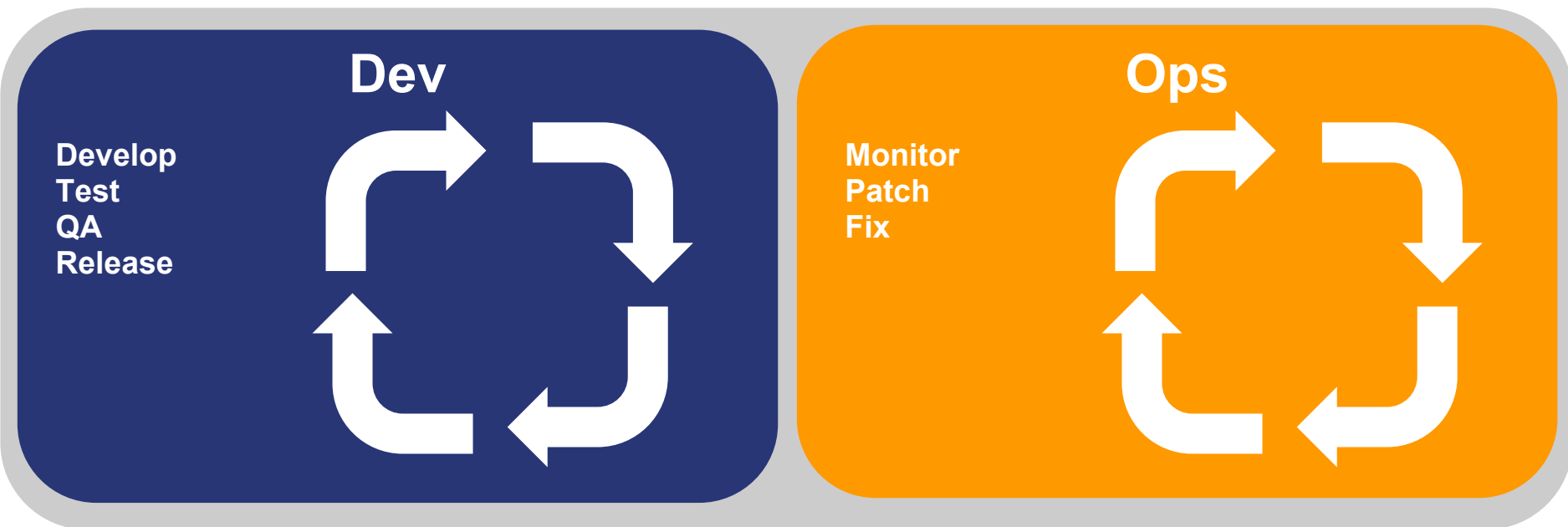
Demo - AWS Console

What is DevOps?

- Buzzword
- Mindset
- Social Perspective
- Technical Perspective

Social Perspective

- Invisible fence between Devs and Ops
- Both throw things over the fence and call it a day
- Not about stable code or stable infrastructure, but a stable business
- All on the same team



- Devs create change
- Ops enforce stability
- Fundamentally opposing goals
- Key is to work together for the benefit of the whole

- Continuous delivery
 - Devs don't release to Ops
 - Ops don't release to Devs
 - Devs + Ops release to the business

Technical Perspective

- Humans make mistakes
- Testing
 - Mitigate risk
 - Don't release broken code
- Monitoring
 - Know when things go wrong (because they will!)
- Automation
 - Address issues quickly and efficiently
 - Only write it once

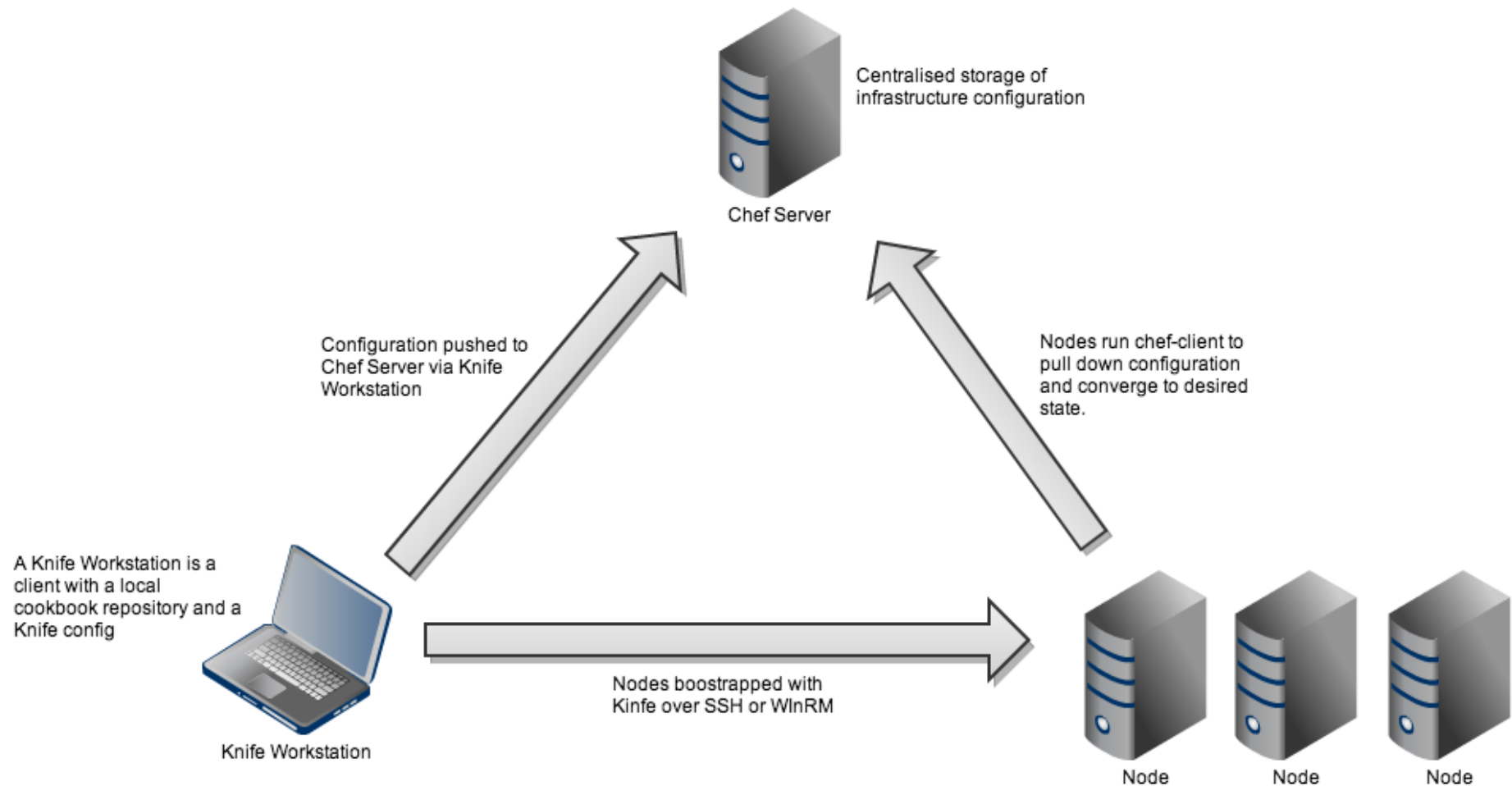
- ~~*"...If you're not nervous deploying to production, you haven't understood the gravity of the situation..."*~~
- Devops done correctly:
 - Confident deployment
 - Confident rollback
 - Confident team

- Code is in source control, so why not infrastructure?
- Define infrastructure as code
- Rebuild entire infrastructure
 - Infrastructure Code +
 - Application Code +
 - Data

Chef

- Configuration management
- System integration
- Infrastructure as code
- Your estate in an API

- Clients communicate with Chef Server and receive their configurations
- Configurations managed via a Knife Workstation (also a Client)
- Clients configure themselves by executing Ruby and converge to the required state
- Hierarchical configuration



Demo - AWS Bootstrap with Chef

Thank you
Any questions?

<http://maxm.eu/hwslides>



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We're recruiting!
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