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APTOMA

Chef @ Aptoma
Redpill Linpro breakfast seminar
February 9th 2016

Introduction

- Håkon Drange

Introduction

About Aptoma

- SaaS provider of tools for online news media.
- 15 employees (80% tech staff)

About Aptoma

Vision:

To help the new media with tools that shapes effective, flexible and profitable news organisations.

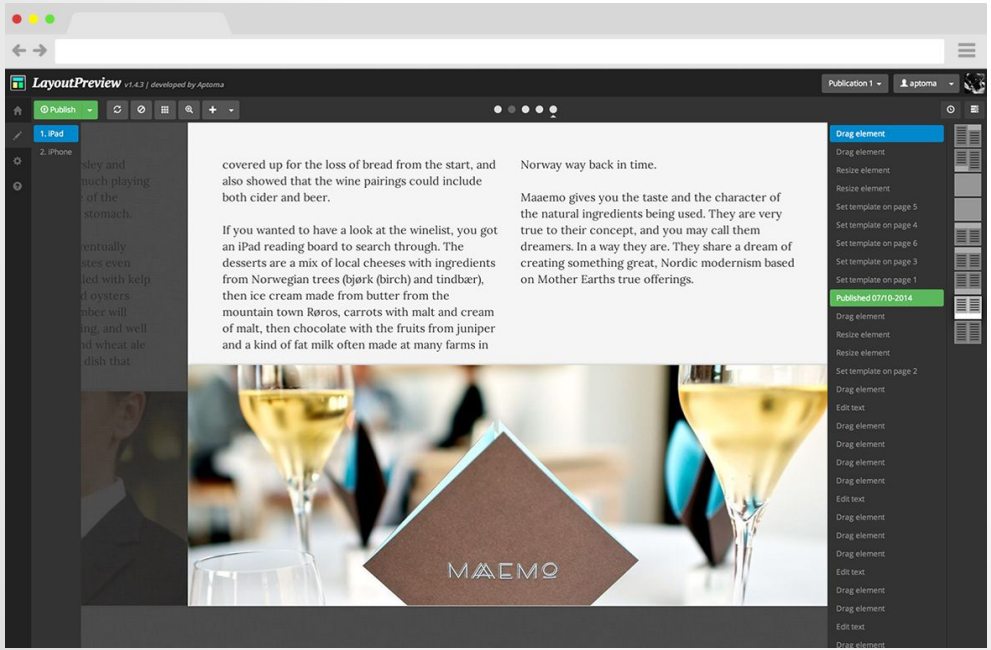
About Aptoma - some customers

About Aptoma

The main services we provide

DrMobile

Good looking editions on mobile devices for “+” subscriptions



DrFront

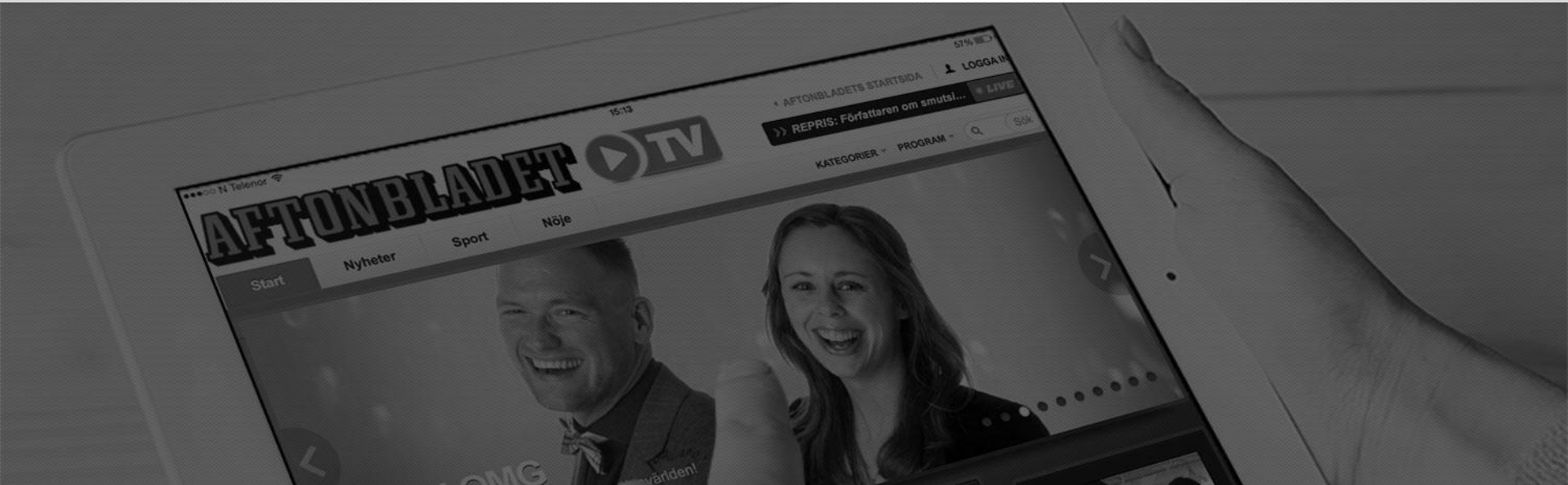
Easy and flexible front page editing

DrPublish

Efficient article production to any output channel

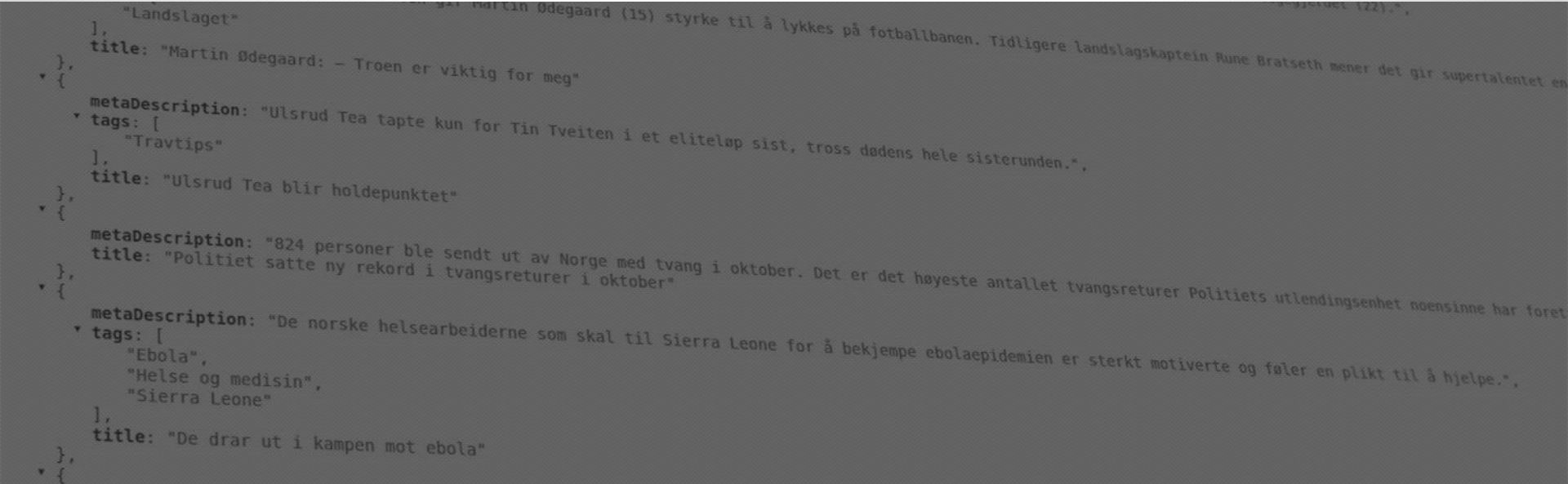
DrVideo

Video encoding, playback API’s and CDN distribution



DrLib

Flexible search API for all your media content



About Aptoma

- All tools delivered as SaaS
- The customer builds their business logic and presentation on top of our APIs

Aptoma Media Platform (AMP)

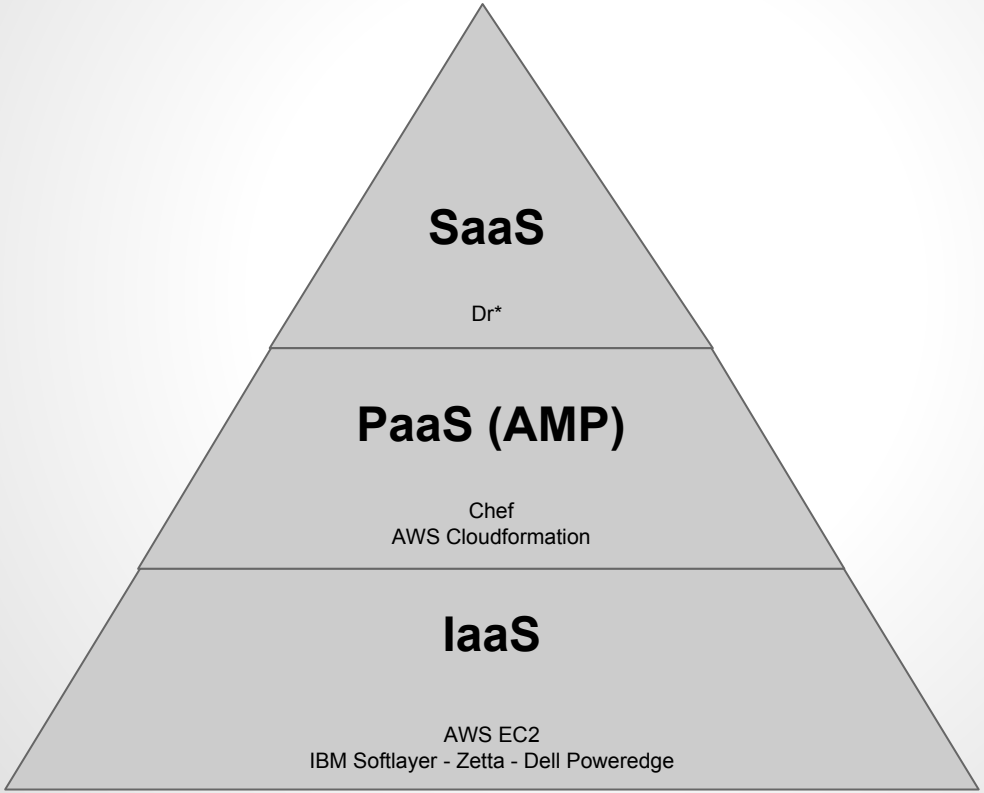
Internal PaaS project started in 2011

Aptoma Media Platform (AMP)

Vendor agnostic

- Cloud providers
- VMware
- KVM
- Physical hardware

Aptoma Media Platform (AMP)



Aptoma Media Platform (AMP)

Consistent and predictable platform for the developers

- Same Ubuntu
- Munin, Nagios, New Relic, log shipping, SSH access, NTP, firewall, swap, etc.
- Same Apache+PHP
- Same MySQL
- Same MongoDB
- etc.

.. Achieved with Chef.

IaaS/PaaS providers

Primary vendor is AWS

Primary region eu-central-1 (Frankfurt)

Secondary region eu-west-1 (Dublin)

Chef

Chef

Chef is a configuration management and automation platform from Opscode.

Chef

Can be used in multiple ways:

- Chef Server mode
- Chef Solo mode
  - With Vagrant

Chef

Building blocks:

- Cookbooks contains recipes
  - Write your own cookbook or leverage community cookboks from the Supermarket
  - Or a combination, with wrapper cookbooks

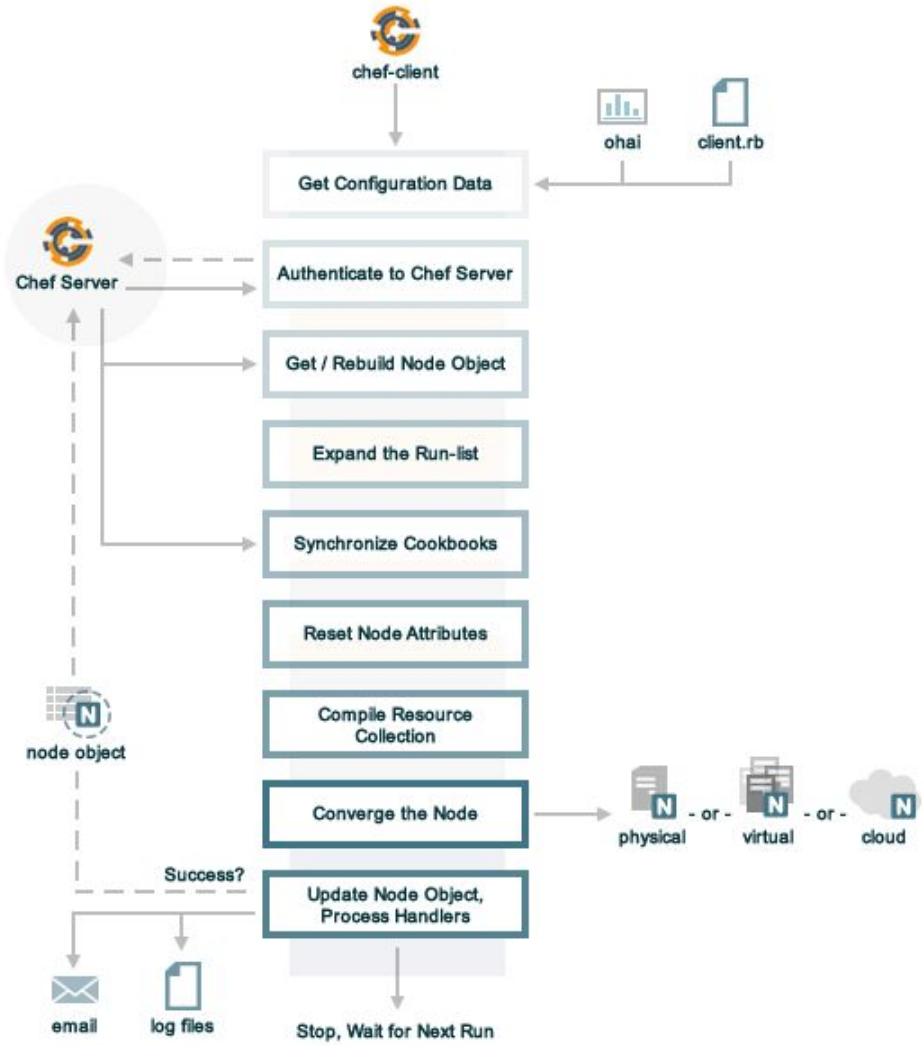
Chef

Building blocks:

- Cookbooks contains recipes
- A role consists of one or more re-usable recipes
- chef-client on the node (server)

Chef

chef-client run:



Chef

Add common bootstrap role first to configure OS platform

Chef

Then add server role

- apache-server
- nginx-server
- varnish-server
- mysql-server
- mongodb-server

Chef

Then add service role for service specific config.

Chef

service-drfront-web

- Adds Apache virtualhosts
- memcached on port 11211
- Ruby gems
- Specific Node.js version

Chef

Base role common-bootstrap on all manually provisioned servers

Chef

Base role *common-bootstrap* on all manually provisioned servers

```
knife bootstrap --bootstrap-version 11.18.12 <hostname> --hint ec2 --environment production-v2 -x tech --sudo -r “role[common-bootstrap],role[apache-server],role[service-drfront-web]”
```

Chef

Base role *common-bootstrap-cloud* on all automatically provisioned servers with AWS Cloudformation

AWS Cloudformation

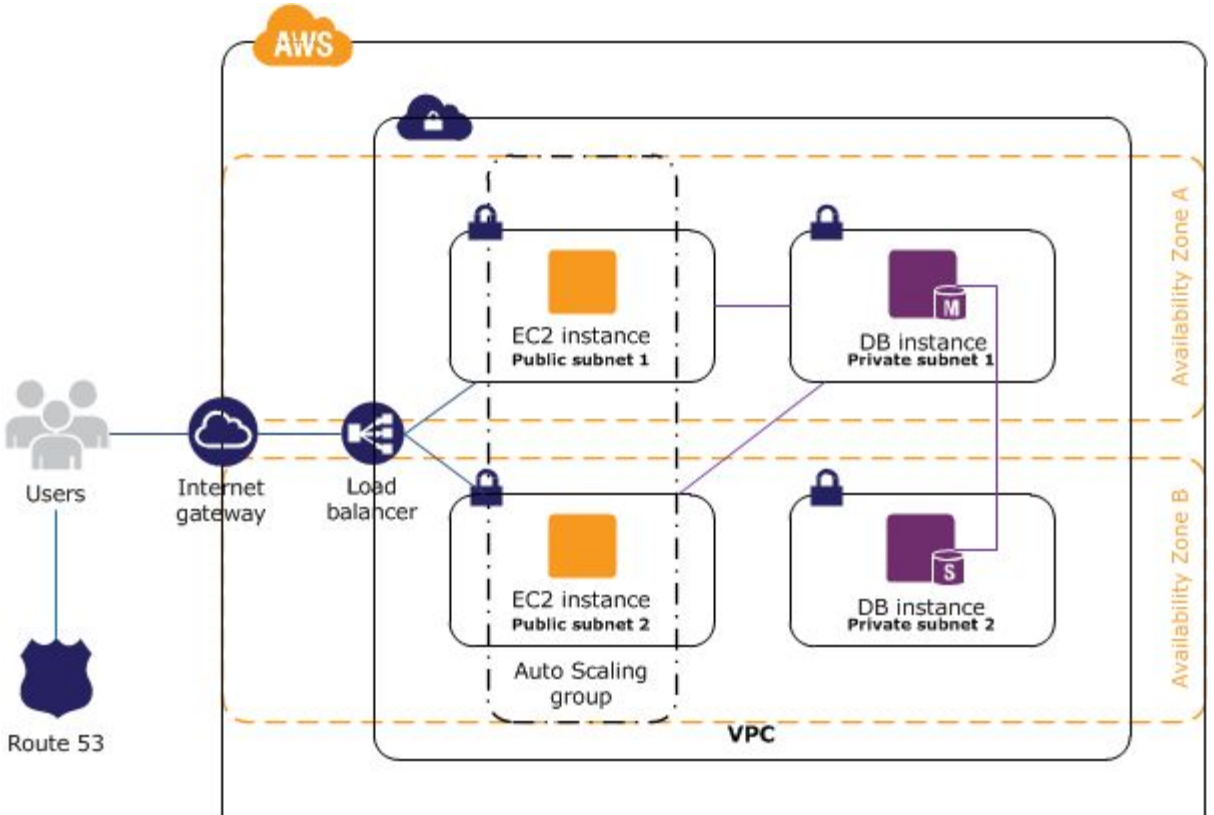
“Provision and manage AWS infrastructure as code”

https://aws.amazon.com/cloudformation/

AWS Cloudformation

```
{
    "Description" : "Create an EC2 instance running the Amazon Linux 32 bit AMI.",
    "Parameters" : {
        "KeyPair" : {
            "Description" : "The EC2 Key Pair to allow SSH access to the instance",
            "Type" : "String"
        }
    },
    "Resources" : {
        "Ec2Instance" : {
            "Type" : "AWS::EC2::Instance",
            "Properties" : {
                "KeyName" : { "Ref" : "KeyPair" },
                "ImageId" : "ami-3b355a52"
            }
        }
    },
    "Outputs" : {
        "InstanceId" : {
            "Description" : "The InstanceId of the newly created EC2 instance",
            "Value" : {
                "Ref" : "Ec2Instance"
            }
        }
    },
    "AWSTemplateFormatVersion" : "2010-09-09"
}
```

AWS Cloudformation



AWS Cloudformation

1. Develop a template
2. Define stack specific parameter values

AWS Cloudformation

Specify Details

Specify a stack name and parameter values. You can use or change the default parameter values, which are defined in the AWS CloudFormation template.
Learn more.

Stack name drp-web-dev-01-euw1

AWS Cloudformation

Parameters

Instance Configuration

Chef run list
role[common-cloud-bootstrap]
The complete Chef runlist, eg. role[common-cloud-bootstrap],role[apache-server-v2],role[service-drfront-web]

Environment
development
Sets the Chef environment and the belonging AWS VPC.

IAM service role
drpublish-ec2-role
Required for Chef auto-provisioning and the grant access for the correct AWS resources. Eg. service-amp-chef-auto-bootstrap-dev-no-cf2

Disk size
32
Size in GB of the root EBS storage volume, in numbers. (MinValue: 16)

Instance type
t2.small
Enter instance type. Default is t2.small.

SSH key
aptoma-haakon

AWS Cloudformation

Instance security group #1	sg-28c9564d	(Optional)
Instance security group #2	sg-4c184b28	(Optional)
Instance security group #3	sg-59285a3d	(Optional)
Instance security group #4		(Optional)

Instance subnets

- subnet-6ac9450f (10.0.0.0/22) (vpc-dev-01-euw1-subnet-01-euw1a) ×
- subnet-82ce7bf5 (10.0.4.0/22) (vpc-dev-01-euw1-subnet-01-euw1b) ×
- subnet-b8f937e1 (10.0.8.0/22) (vpc-dev-01-euw1-subnet-01-euw1c) ×

eu-central-1: prod (172.31.0.0/20, 172.31.16.0/20), dev (10.10.0.0/23, 10.10.2.0/23), staging (10.2.0.0/23, 10.2.2.0/23). eu-west-1; dev [subnet-6ac9450f (10.0.0.0/22), subnet-82ce7bf5 (10.0.4.0/22), subnet-b8f937e1 (10.0.8.0/22)], prod [subnet-6a3b9f0f (172.30.0.0/24), subnet-a2f032d5 (172.30.1.0/24), subnet-302dcc69 (172.30.2.0/24)].

AWS Cloudformation

AWS Cloudformation

Tags

You can specify tags (key-value pairs) for resources in your stack. You can add up to 10 unique key-value pairs for each stack. Learn more.

	Key (127 characters maximum)	**Value** (255 characters maximum)	
1	Name	drp-web-dev-01-euw1	✖
2	Department	drpublish	✖
3	Environment	development	✖
4	Location	eu-west-1	✖
5	Service	drpublish-web-development	✖
6			+

▼ Advanced

You can set additional options for your stack, like notification options and a stack policy. Learn more.

AWS Cloudformation

1. Develop a template
2. Parameterize input values
3. Define resources
    a. Launch Configuration for an Auto Scaling Group
    b. Instance type, storage configuration
    c. OS via AMI ID
    d. Elastic Load Balancer to attach to (optional)
4. Scaling thresholds
5. .. etc

AWS Cloudformation

Now you can create a new stack (a collection of resources)

AWS Cloudformation

Everything gets provisioned automatically

AWS Cloudformation

Consistent and predictable configuration

AWS Cloudformation

Provision stack via AWS Console or API

AWS Cloudformation + Chef

So how do we kick off the Chef node bootstrap process?

AWS Cloudformation + Chef

In Cloudformation Launch Configuration user-data:

- Download and install publicly available dependencies

```
"apt-get update; apt-get upgrade -y\n",
"apt-get install -y libffi-dev libssl-dev python-setuptools munin-node\n",
"easy_install pip\n",
"pip install pyopenssl ndg-httpsclient pyasn1 requests s3cmd boto3 awscli\n",
"easy_install https://s3.amazonaws.com/cloudformation-examples/aws-cfn-bootstrap-latest.
tar.gz\n",
```

AWS Cloudformation + Chef

In Cloudformation Launch Configuration user-data:

- Download and install private stuff from S3
  - Aptoma Chef bootstrap validator key
  - amp-aws-auto-bootstrap-v1.1.0.py bootstrap script
  - chef-client installer
- If all OK, Cloudformation signal OK to the Auto Scaling Group

AWS Cloudformation + Chef

The ASG should now have instances attached to a load balancer

ELB instance health check /status fails because no application is deployed

AWS Cloudformation + Chef

What about application deployments?

AWS CodeDeploy

We use AWS CodeDeploy.

AWS CodeDeploy

CodeDeploy is a deployment tool from AWS.

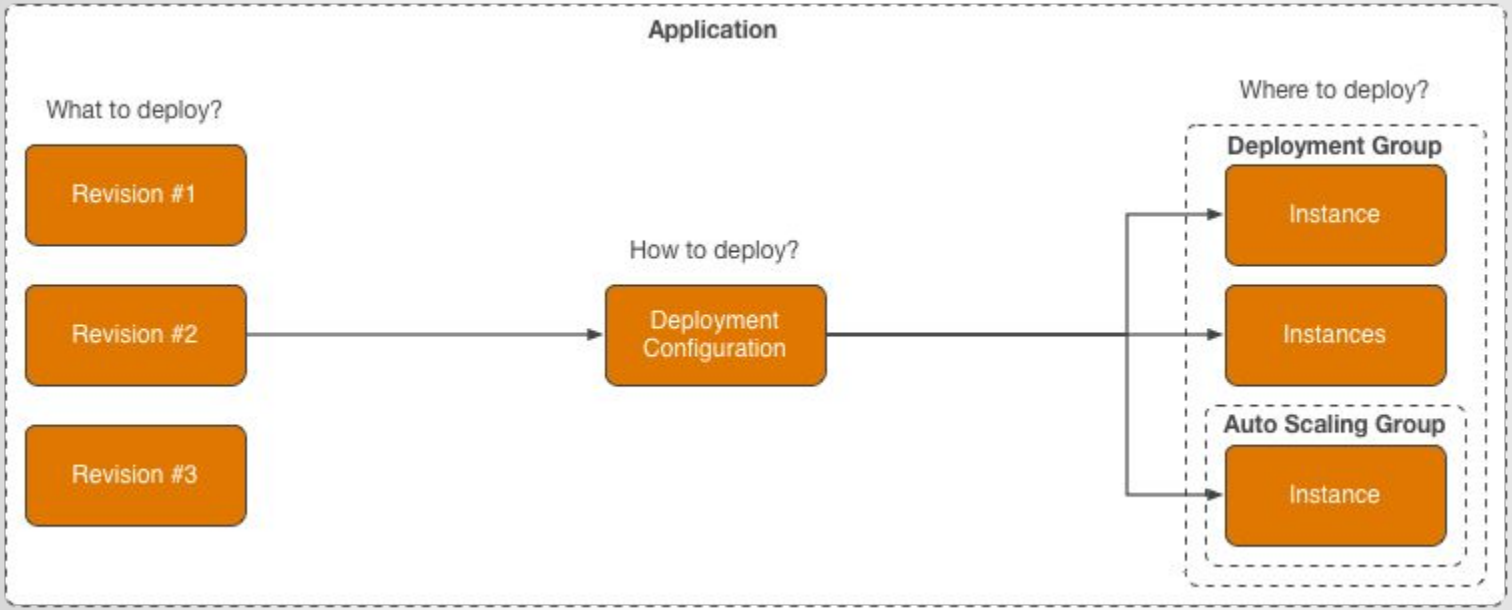
AWS CodeDeploy

Nice integration with Auto Scaling

AWS CodeDeploy

A framework, not a complete tool

AWS CodeDeploy



Summary

1. Provision servers manually or with Cloudformation
2. Use the same Chef cookbooks for any IaaS
3. Leverage Auto Scaling with Cloudformation and CodeDeploy

Summary

We achieve:

- Automated, repeatable infrastructure with re-usable code
- Predictable and scalable setup
- Easy and efficient for developers to set up new services

That’s all, folks!

Thanks

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Slides: http://apto.ma/slides20160209hd
WWW: http://aptoma.com/

References

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