Lazy AWS

A.k.a Unemployed DevOps Professionals

What is the ☁️?

Datacenter with buttons?
Buzzword?
Something different?

Not total hype

≠ Datacenter

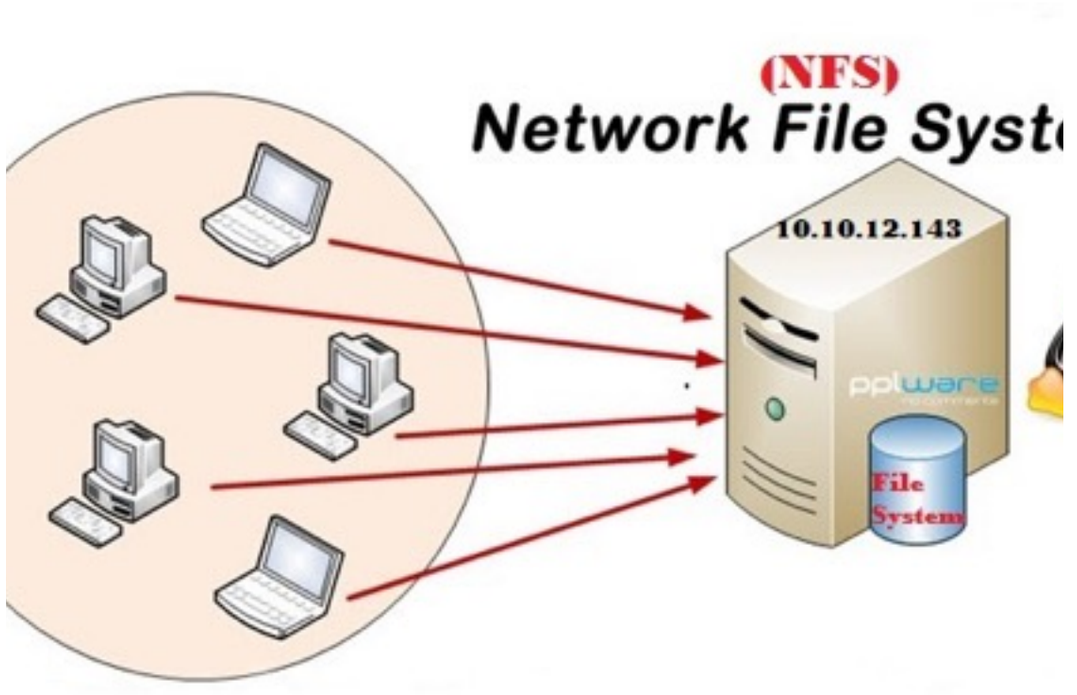
pbuckley> Cache all the things
pbuckley> Consider the flow of a request thru the system. Client to api, api to db. This basic flow has at least three points of fail
networks, HTML5 application cache, etc)
pbuckley> Consider a fall-back static object cache that enables a safe mode level of functionality in case of DB failure
pbuckley> Design your system so that you pay for failure without giving the appearance of being down or unavailable
pbuckley> Not all of the user experience require sync with the back-end
pbuckley> Fast and flexible
pbuckley> No upfront investment
pbuckley> Better precise cost control over the resources you NEED
pbuckley> This is not your father's datacenter
pbuckley> You don't control the network, you ask nicely
pbuckley> You can't buy an extra power supply
pbuckley> You can't buy a diesel generator
pbuckley> You can't build a crazy raid storage device (Think Hitachi USPv 5 chassis SAN, yeh nope)
pbuckley> If you try to compensate in the same ways as you would in a datacenter, your costs will run out of control
pbuckley> AWS can and does fail
pbuckley> April 21, 2011 June 29, 2012 October 22, 2012 December 24, 2012 aws outages (software bugs, human error, thunderstorms)
pbuckley> Embrace failure. Your instance will randomly fail. API's will become unavailable. Your strengths are different then in a da
pbuckley> Define what your availability requirements are going to be and design your solution around it.
pbuckley> Consider the flow of a request thru the system. Client to api, api to db. This basic flow has at least three points of fail
pbuckley> Many small nodes versus a few larger nodes. A larger pool of small nodes that has a single node fail will take away less %
pbuckley> CAP Theorem lives. Choose eventual consistency and availability.
pbuckley> Some gotchas with the subsystems
pbuckley> S3 is awesome. Not fast, but speed remains consistent when many nodes are hitting it. Compress everything. Use lzo for hado
pbuckley> Autoscale is beautiful, not only because of what it does, but due to the architectural constraints it places on you. Your b
pbuckley> Elastic load balancers take a little while to warm up. They don't support web sockets without tcp pass through. Though othe
pbuckley> Global load balancing is your friend (DNS, personal plug for Dynect). Don't depend on the uptime of a single avaibility zon
pbuckley> Use identity manager roles for access. Give least privelage. Setup accounts by app and user
pbuckley> Don't try to send email from an instance. Many of them have been blacklisted by RBLs. Instead use simple email service.
pbuckley> Cloudformation can be cool, templating language is finicky and doesn't support comments. Investigate use of fog (ruby) or b
pbuckley> ELB -> ELB x N Too support cool things like having the ability to remove pools of machines for canary deploys
pbuckley> Manage costs!
pbuckley> Elastic map reduce + Spot instances or redshift is typically cheaper and requires less engineering hours then running your
pbuckley> Prices and features vary by region
pbuckley> Age out files stored in S3 to glacier. They are still visible thru the S3 api.
pbuckley> Investigate instance marketplace, potential to buy instances to get upfront savings without going with reserved instances.
pbuckley> Reserved instances have a higher upfront cost but will eventually be cheaper if the instance capacity is used over n time.
pbuckley> Maximize IOPS, use tricks like compression to reduce the amount of data that needs to be read off disk
pbuckley> Use m1.xlarge or c1.xlarge or ssds and raid 0 ephemeral drives for cheaper fast IOPS
pbuckley> EBS optimized, provisioned iops for more expensive but "promised" IOPS. Increases the number of failure points. EBS has a h
pbuckley> AWS is a nickle and dime economy, watch out or it will take your leg.

Ask Experts

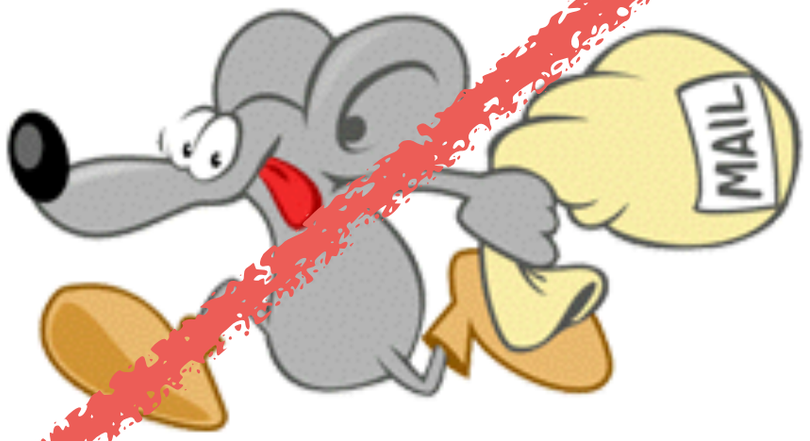
puppet
labs

MAIL

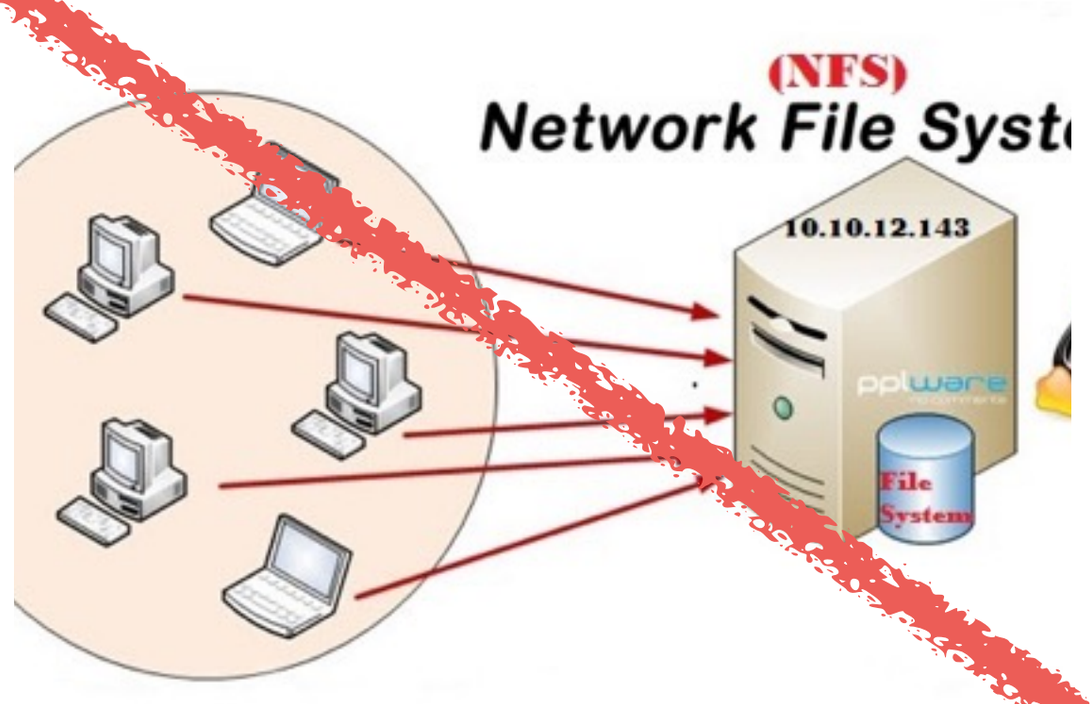
POSTFIX


(NFS)
Network File Syste
10.10.12.143
pplware
File
System

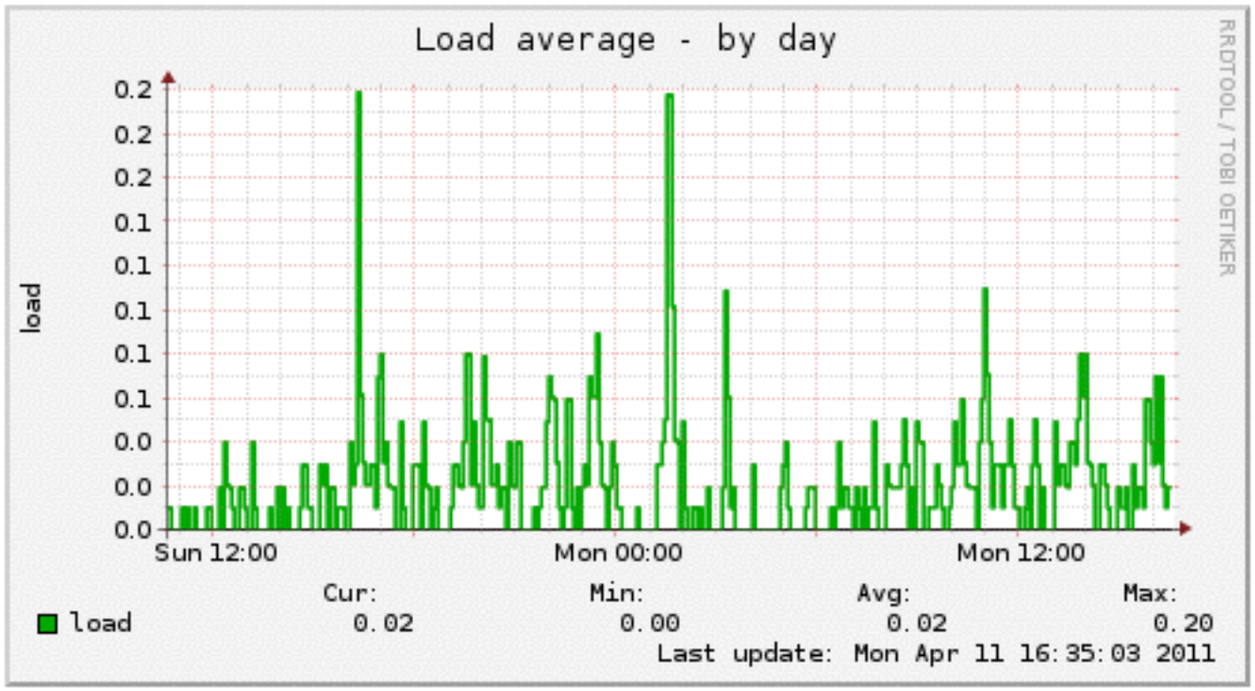
puppet
labs

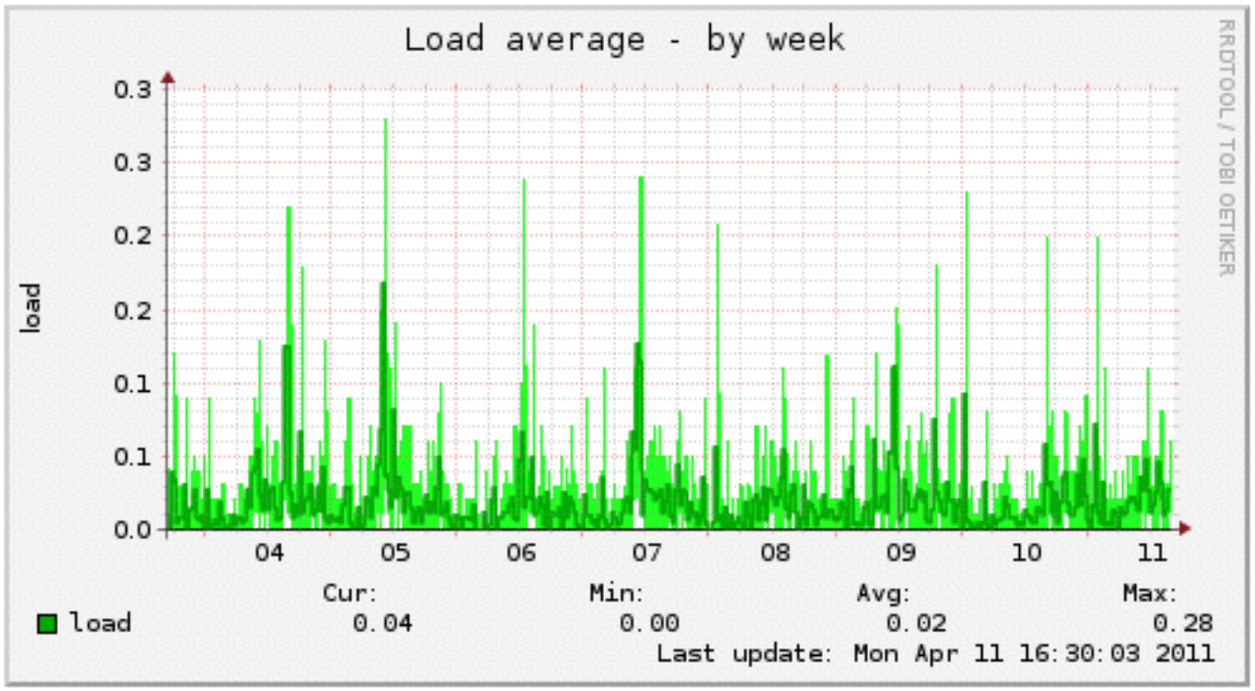

MAIL

POSTFIX

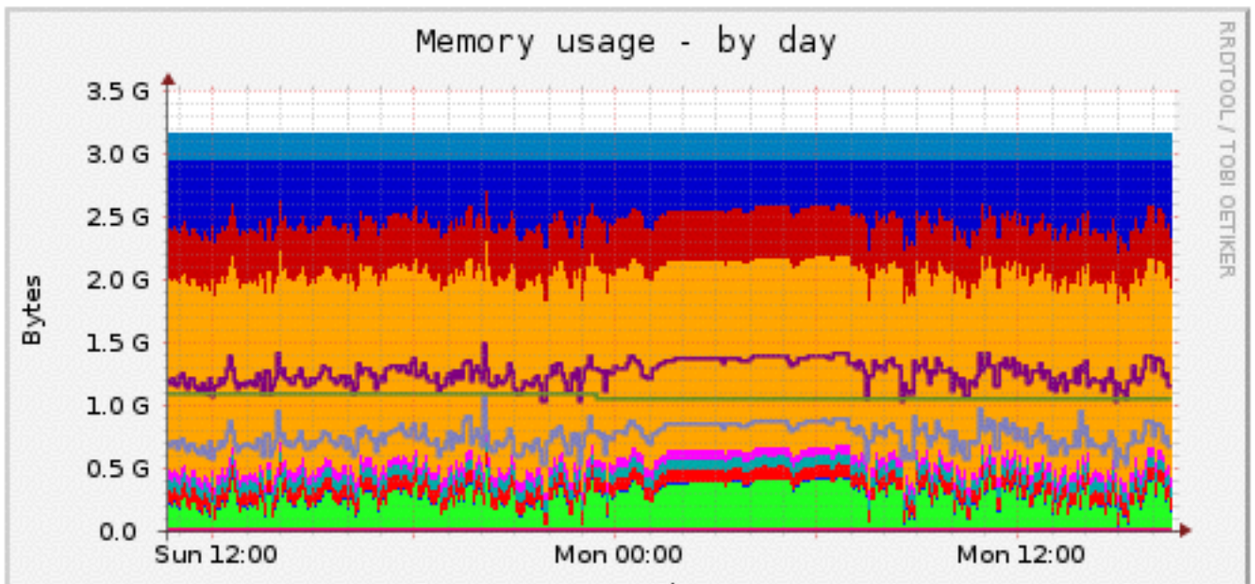

(NFS)
Network File Syst
10.10.12.143
File
System

:: Load average



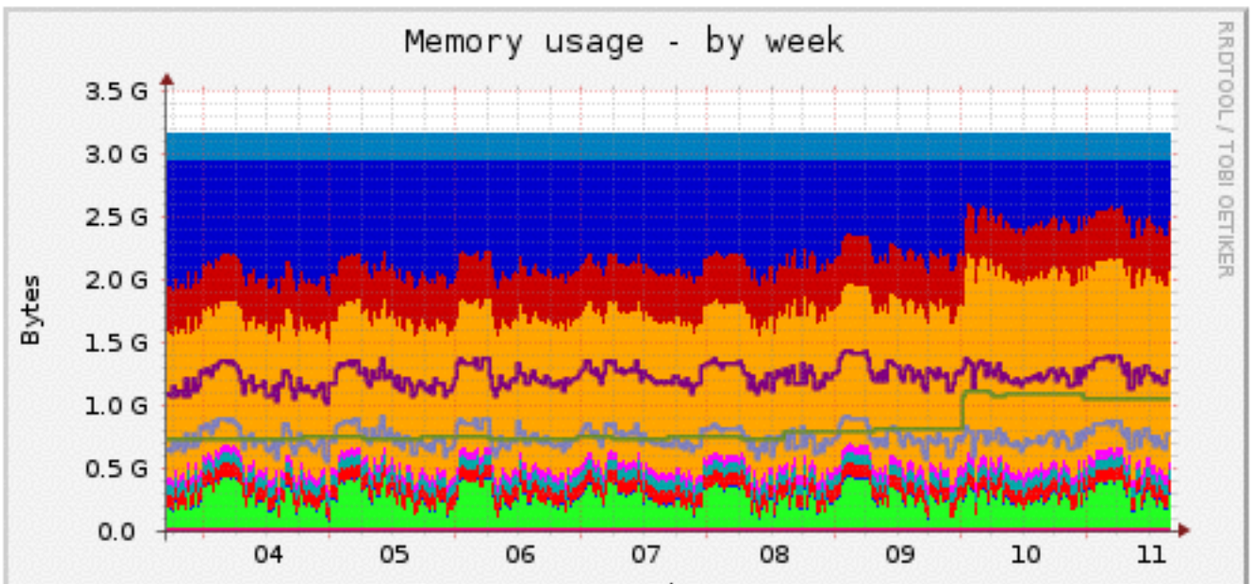


:: Memory usage



	Cur:	Min:	Avg:	Max:
apps	154.23M	28.20M	278.71M	514.42M
page_tables	11.78M	9.62M	10.69M	20.61M
swap_cache	103.64M	103.64M	104.85M	106.48M
vmalloc_used	82.05M	82.05M	82.05M	82.05M
slab_cache	75.00M	74.13M	74.52M	76.41M
cache	1.51G	1.50G	1.51G	1.53G
buffers	419.67M	415.77M	417.78M	419.67M
unused	633.68M	249.66M	507.32M	762.89M
swap	206.55M	206.55M	206.69M	206.88M
committed	687.08M	537.76M	782.43M	1.08G
mapped	17.03M	16.85M	17.17M	18.28M
active	1.15G	1.03G	1.27G	1.50G
inactive	1.07G	1.06G	1.08G	1.10G

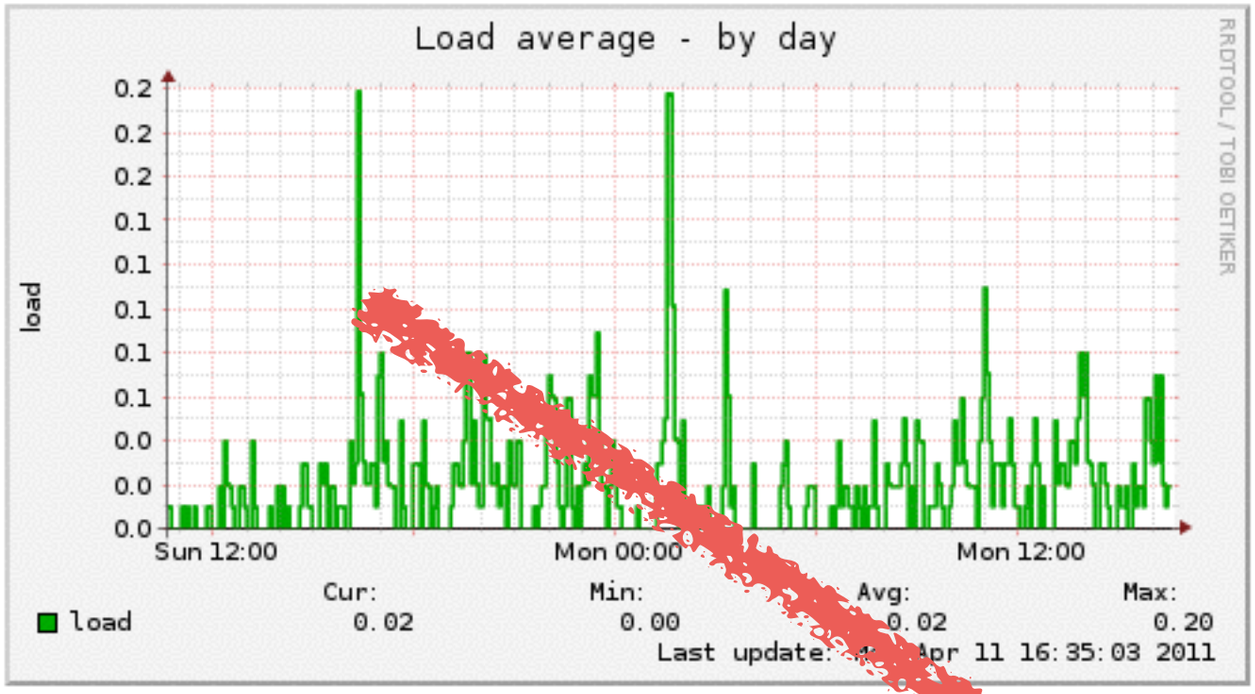
Last update: Mon Apr 11 16:35:04 2011

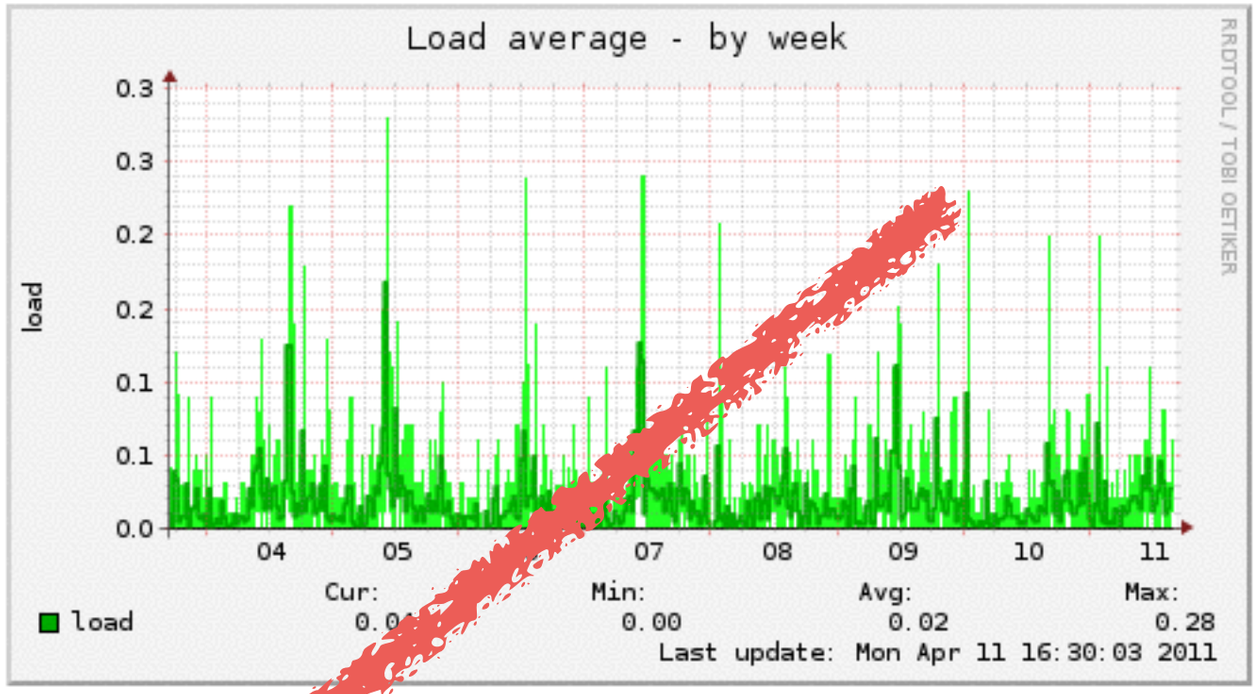


	Cur:	Min:	Avg:	Max:
apps	317.93M	-5.15M	267.58M	582.07M
page_tables	10.52M	7.23M	10.69M	20.61M
swap_cache	103.64M	103.64M	106.39M	107.46M
vmalloc_used	82.05M	82.05M	82.05M	82.05M
slab_cache	74.70M	60.75M	66.76M	76.41M
cache	1.51G	1.15G	1.27G	1.58G
buffers	419.63M	370.96M	397.49M	419.65M
unused	472.07M	249.66M	796.49M	1.18G
swap	206.55M	206.55M	208.39M	209.03M
committed	816.02M	469.10M	772.08M	1.08G
mapped	17.29M	15.42M	16.94M	19.09M
active	1.31G	953.66M	1.24G	1.56G
inactive	1.07G	757.22M	850.24M	1.11G

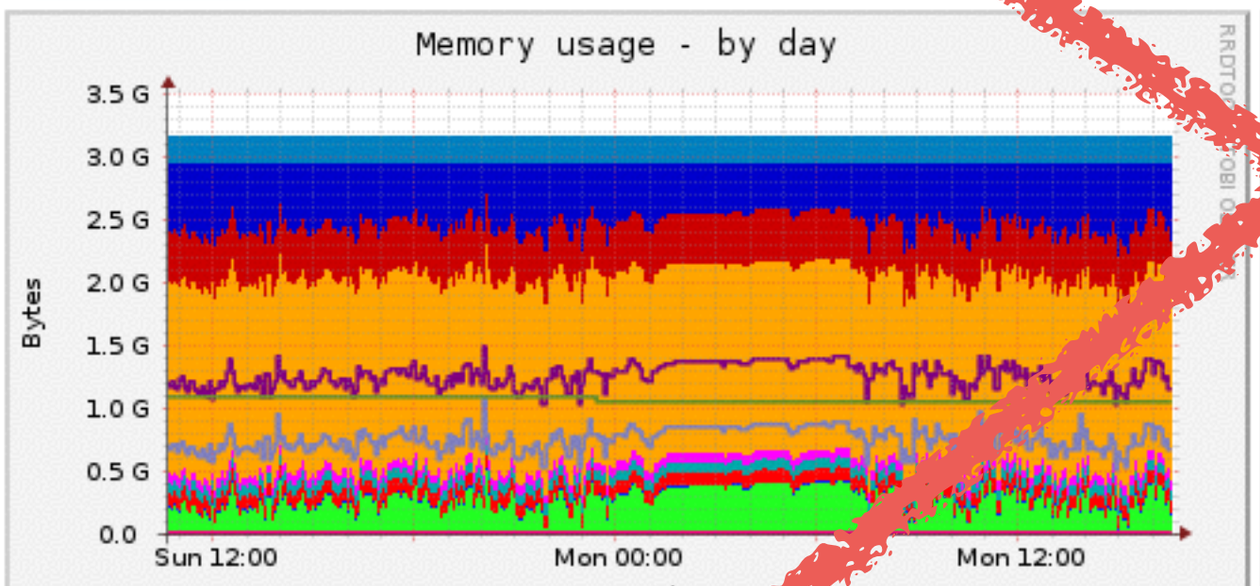
Last update: Mon Apr 11 16:30:03 2011

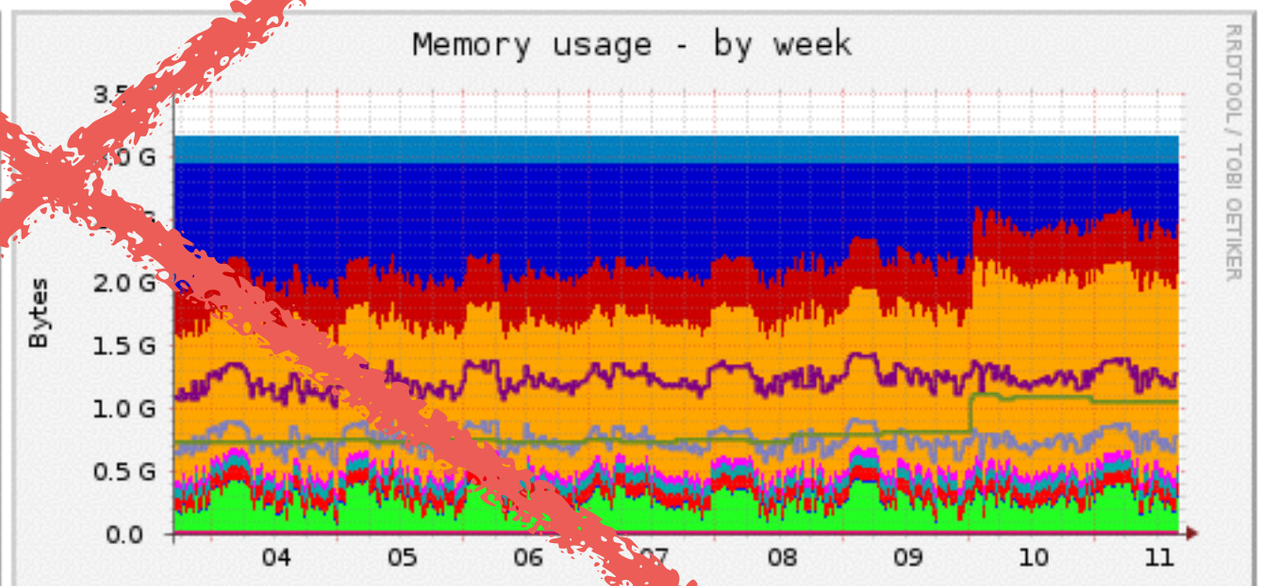
:: Load average





:: Memory usage





“B- B- But I need my configuration management engine!!”

“B- B- But I need my configuration management engine!!”

Simply your life

Why make things complicated?

Simplify!

Amazon Linux

yum-s3-iam

Shell scripts/boto

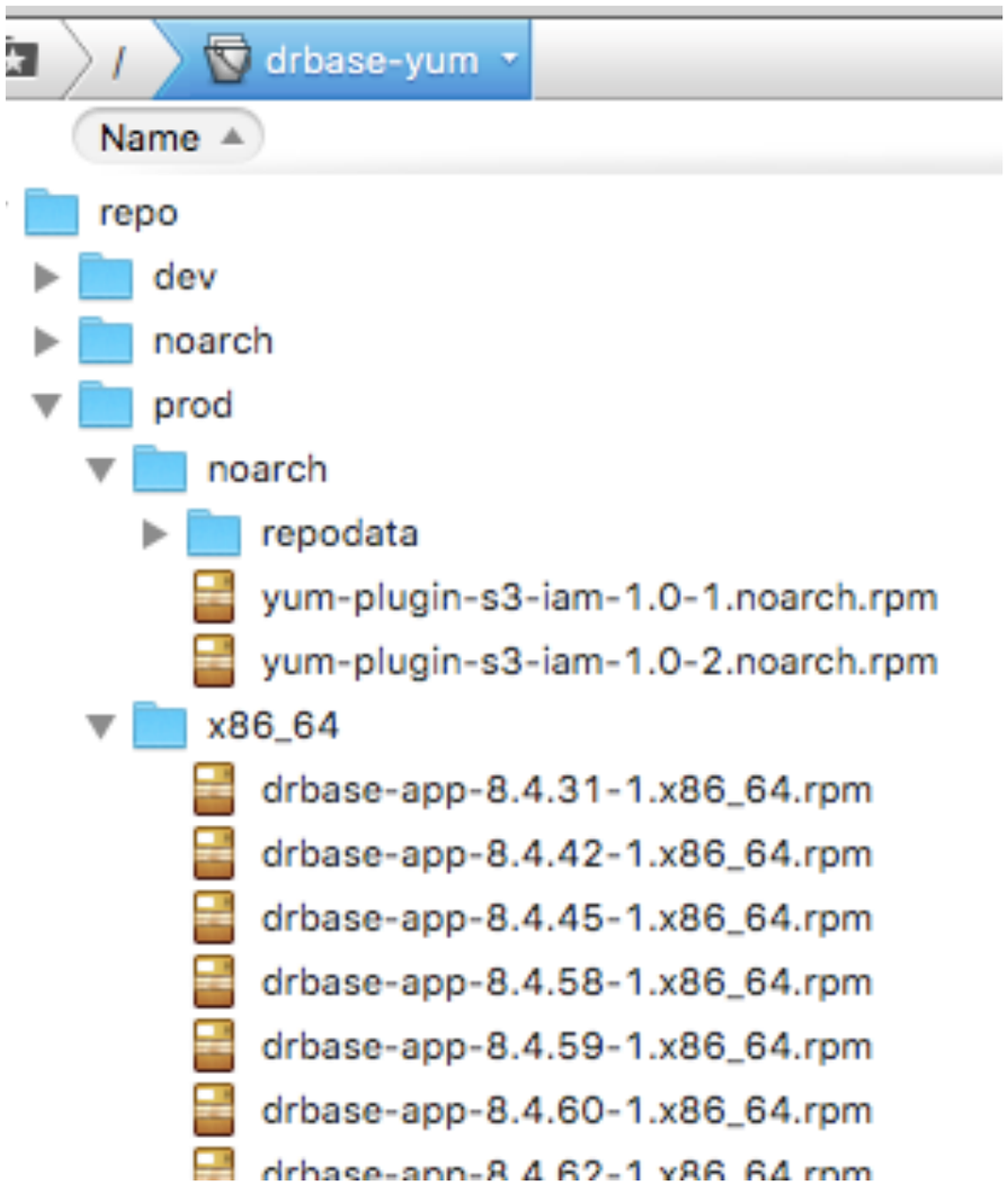
CodeDeploy

AutoScaling

Udo

yum-s3-iam

* Yum (RPM)
* S3
* IAM
* rpmbuild
* s3sync



RPM

* Provisioning
* Dependencies
* Config files
* Run commands
* Initscripts
* Application

```
# sync up to s3 drbase-pub/$env/repo
S3PUT=s3put --region us-west-2 -c 4
sync-yum-plugin:
    $(S3PUT) --bucket drbase-pub --prefix $(NOARCH) --key_pr
sync-dev: sync-yum-plugin sumologic-download-rpm repo
    $(S3PUT) --bucket drbase-yum --prefix $(REPODIR) --key_p
sync-qa: sync-yum-plugin sumologic-download-rpm repo
    $(S3PUT) --bucket drbase-yum --prefix $(REPODIR) --key_p
sync-stage: sync-yum-plugin sumologic-download-rpm repo
    $(S3PUT) --bucket drbase-yum --prefix $(REPODIR) --key_p
sync-prod: sync-yum-plugin sumologic-download-rpm repo
    $(S3PUT) --bucket drbase-yum --prefix $(REPODIR) --key_p
```

```
# build everything a cluster needs
all-rpms: rpmprep base logger static configs app wsnotif

# rpm builds:
base: rpmprep
    rpmbuild -bb SPECS/drbase-base.spec
logger: rpmprep
    rpmbuild -bb SPECS/drbase-papertrail.spec
    rpmbuild -bb SPECS/drbase-sumologic.spec
static: rpmprep
    rpmbuild -bb SPECS/drbase-static.spec
configs: rpmprep
    rpmbuild -bb SPECS/drbase-cfg-dev.spec
    rpmbuild -bb SPECS/drbase-cfg-qa.spec
    rpmbuild -bb SPECS/drbase-cfg-stage.spec
    rpmbuild -bb SPECS/drbase-cfg-prod.spec
    rpmbuild -bb SPECS/drbase-cfg-prod-replicated.spec
```

```
Summary: Static file webserver

Name: myapp-static

Version: 1.0

Release: 1

Source0: myapp-static-nginx.conf

BuildRoot: %{_tmppath}/%{name}-%
{version}-%{release}-root

Requires: nginx myapp-static-files

%description

Sets up nginx to serve static files
from disk

%prep

rm -rf $RPM_BUILD_ROOT

%build

mkdir -p $RPM_BUILD_ROOT/etc/nginx/
conf.d

cp %{SOURCE0} $RPM_BUILD_ROOT/etc/
nginx/conf.d/drbase-static.conf

%install
```

```
%post

/sbin/service nginx start >/dev/null
2>&1

/sbin/chkconfig nginx on

%preun

if [ $1 -eq 0 ] ; then

    /sbin/service nginx stop >/dev/
null 2>&1

    /sbin/chkconfig --del nginx

fi

%clean

rm -rf $RPM_BUILD_ROOT


%files

%attr(-,root,root)

/etc/nginx/conf.d/myapp-static.conf
```

make(1)

Pre-packaged commands
Dependencies
Shell

Not just for compiling!

```
vagrant-update-dev: vagrant-destroy vagrant-login
vagrant-reload-dev: vagrant-destroy run
vagrant-destroy:
    vagrant destroy -f
init-dev-vagrant: init-vagrant-db init-schema init-
init-vagrant-db:
    sudo su - postgres --session-command="createuse
    createdb

init-local-db: pgsetup create-local-db init-schema
pgsetup:
    $(PGSETUP)
create-local-db:
    dropdb --if-exists "$(USER)"
    createdb
    psql < bootstrap/extensions.sql
init-schema:
    psql -c "ALTER USER \"$(USER)\" SET search_path
    psql < bootstrap/mwschema.sql
    if [ -e bootstrap/updates.sql ]; then psql < bo
populate-dev: populate-sql dev-migrations
init-travis: dep-deploy init-travis-config init-tra
init-travis-config:
    cp config/travis/mw_local.yml ./
init-travis-db:
    psql -U postgres travis < bootstrap/extensions.
populate-sql:
    psql < bootstrap/populate.sql
    psql < bootstrap/materialized_view_for_reports.
init-local-config:
    cp config/local/mw_local.yml ./mw_local.yml
    sed -e 's/host=localhost/host=$(PGHOST)/' mw_lo
    mv mw_local.yml-pghost mw_local.yml
init-vagrant-config:
    cp config/vagrant/mw_local.yml ./mw_local.yml
```

Deployment Group qa

Deployment ID d-RFPETA80F

Deployment Config CodeDeployDefault.AllAtOnce

Minimum Healthy Hosts 0 of 3 instances

Revision Created Apr 8, 2016 11:09:46 PM UTC

Description Application revision registered by Deployment ID: d-CMGU35OYE

Filter Status ^ Instances per page 10 ‹ **Viewing 1 to 3 instances** ›

Instance ID	Start Time	End Time	Duration	Status	Most Recent Event	Events
i-1c62bedb	1 minute ago			In Progress	ApplicationStop	View Events
i-999b445e	1 minute ago			In Progress	ApplicationStart	View Events
i-f59c4332	1 minute ago			In Progress	ApplicationStart	View Events

CodeDeploy

Alarm:workers-outstanding

Details | History

State Details: State changed to ALARM at 2016/04/11. Reason: Threshold Crossed: 5 datapoints were greater than or equal to the threshold (100.0). The most recent datapoints: [554.0, 660.0].

Description:

Threshold: PMI >= 100 for 5 minutes

Actions:
In ALARM:
- For group **prod-worker** use policy **outstand-scale-up** (Add 2 instances)

In OK:
- For group **prod-worker** use policy **outstand-scale-down** (Remove 1 instance)

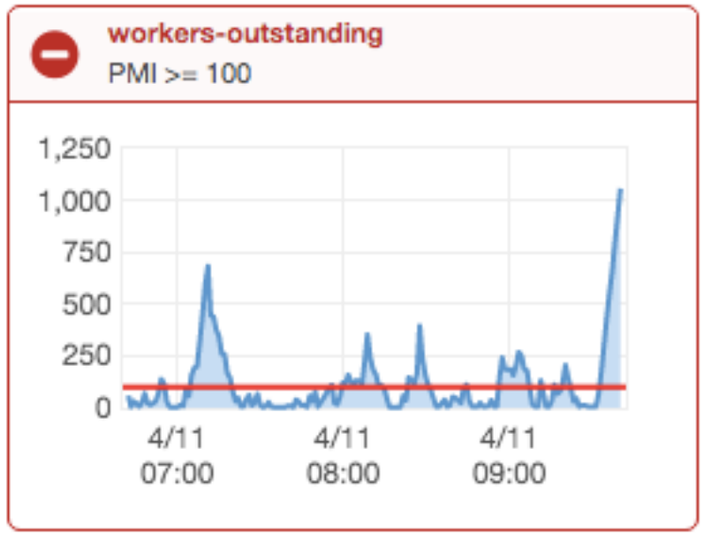
Namespace: WorkersOutstanding

Metric Name: PMI

Dimensions:

Statistic: Maximum

Period: 1 minute



CloudWatch

Custom data are sweet!
Trigger AutoScaling actions!
Trigger alerts!

UDO

Unemployed DevOps

Configuration

Declarative config

(Okay maybe it's a bit like configuration management… sue me)

Just wrappers around handy API methods

Lazy CLI interface

udo.sample.yml

```
clusters:
    # create a "development" cluster
    dev:
        # human-readable name
        description: "Development"
        # override default
        repo_url: https://s3-us-west-2.amazonaws.com/mya
        # yum packages to install
        packages:
            - 'myapp-prov-dev'
            - 'myapp-cfg-dev'
        keypair_name: 'dev'
        subnets_cidr:
            - '10.10.0.0/16'
            - '10.20.0.0/16'
        # for instance roles
        iam_profile: 'developer'
        # optional
        tenancy: 'dedicated'  # VPC 'default' or 'dedica
        # application roles for instances
        # (sub-clusters that can be managed as distinct
        roles:
            webapp:
                instance_type: 'm3.medium'
                scale_policy:
                    min_size: 1
                    max_size: 3
                    desired: 2
                elbs:
                    - 'dev-https'
                security_groups:
                    - 'sg-abcdef123'  # you'll want to s
                packages:
                    - 'myapp-app'
                    - 'myapp-app-deps'
                    - 'myapp-app-core'
```

```
(db)nobhill~/dev/db (master)* $ udo deploy qa 1e2a5410636a48799ac14b988e9eeb81081f8e8f
Deploying commit 1e2a541063 to deployment group: qa
'Waiting for deployment...'
. . . . . Deployment of commit 1e2a541063
6a48799ac14b988e9eeb81081f8e8f to deployment group: qa successful.
```

UdoBot BOT 3:21 PM

> **bobo@nobhill.lan**
> Deploying commit 1e2a541063 to deployment group: qa

UdoBot BOT 3:24 PM

> **bobo@nobhill.lan**
> Deployment of commit 1e2a5410636a48799ac14b988e9eeb81081f8e8f to deployment group: qa successful.

CodeDeploy Integration

(And Slack)

Blah blah