Monitoring at Cloud Scale

Julien Pivotto

inuits
open source

Build a cloud Day Amsterdam
June 13th, 2013

Table of contents

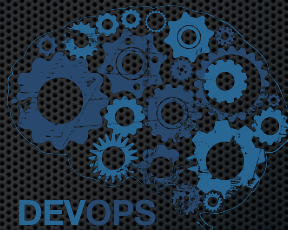# Julien Pivotto

- sysadmin @ inuits
- open-source defender for 7+ years
- devops believer
- @roidelapluie on twitter/github

Introduction
Around monitoring
Tools
Conclusion

DevOps
monitoringsucks
monitoringsucks

What is that DevOps stuff again?

- Culture
- *(Lean)*
- Automation
- Measurement
- Sharing

Damon Edwards and John Willis

Introduction
Around monitoring
Tools
Conclusion

DevOps
monitoringsucks
monitoringsucks

#monitoringsucks

- https://github.com/monitoringsucks
- a movement to find a solution to monitoring
- the feeling that monitoring is stucked in the past

Introduction
Around monitoring
Tools
Conclusion

DevOps
monitoringsucks
monitoringsucks

#monitoringlove

- then it turned into #monitoringlove
- relevant tools exist
- they just need to be used
- following the unix philosophy

we are going to explore some of them

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

What is different in the cloud?

- Scale
- Velocity
- More changes, more often

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

What do you need?

- scalability

- automation

time for retirement

- forget all-in-one tools
- forget auto-discovery tools
- forget non-scalable tools
- forget tools you can not automate

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about. . .

http://www.flickr.com/photos/mourner/150844753/

Zabbix

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about...

http://www.flickr.com/photos/mourner/150844753/

Centreon

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about...

http://www.flickr.com/photos/mourner/150844753/

GroundWork

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about. . .

http://www.flickr.com/photos/mourner/150844753/

Cacti

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about...

http://www.flickr.com/photos/mourner/150844753/

Hyperic

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about...

http://www.flickr.com/photos/mourner/150844753/

BigBrother

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about...

http://www.flickr.com/photos/mourner/150844753/

Munin

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

forget about...

http://www.flickr.com/photos/mourner/150844753/

Zenon

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

Your infrastructure today

http://www.flickr.com/photos/bjbrake/235217140/

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

Your infrastructure tomorrow

http://www.flickr.com/photos/bjbrake/235217140/

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

Your infrastructure in 6 months

http://www.flickr.com/photos/bjbrake/235217140/

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

Challenges

- Reproducability
- Speed
- Metrics
- Orchestration

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

WANTED

http://www.flickr.com/photos/pagedooley/3124443099/

- Small tools
- Collect / Mangle
- Analyse / Act
- Visualize

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

WANTED

The UNIX philosophy

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

Automation

- One source of trust: puppet, chef, . . .

- Exported resource

- Monitor in the same location you deploy

- Infrastructure-as-Code

- no autodiscovery tools

Introduction
Around monitoring
Tools
Conclusion

The cloud
The past
Environment
Challenges
Infrastructure as code

Automation

If it is not automated || not monitored then it does not exist!

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Collectd

- Statistics collection daemon
- A lot of plugins available...
- Can send data to graphite
- Simple configuration

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Collectd plugins

http://www.flickr.com/photos/juhansonin/3141561416/

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Collectd plugins

AMQP Apache APC_UPS Apple_Sensors Ascent Battery BIND Carbon
ConnTrack ContextSwitch CPU CPUFreq CSV cURL cURL-JSON cURL-XML
DBI DF Disk DNS E-Mail Entropy Exec FileCount FSCache GenericJMX
gmond HDDTemp Interface IPMI IPTables IPVS IRQ Java libvirt Load
LogFile LPAR MadWifi MBMon memcachec memcached Memory Modbus
Monitorus Multimeter MySQL NetApp Netlink Network NFS nginx
Notify_Desktop Notify_Email NTPd NUT olsrd OneWire OpenVPN OpenVZ
Oracle Perl Pinba Ping PostgreSQL PowerDNS Processes Protocols Python
Redis RouterOS RRDCacheD RRDtool Sensors Serial SNMP Swap SysLog
Table Tail Tape TCPConns TeamSpeak2 TED thermal TokyoTyrant UnixSock
Uptime Users UUID Varnish vmem VServer Wireless XMMS
Write_Graphite Write_HTTP Write_MongoDB
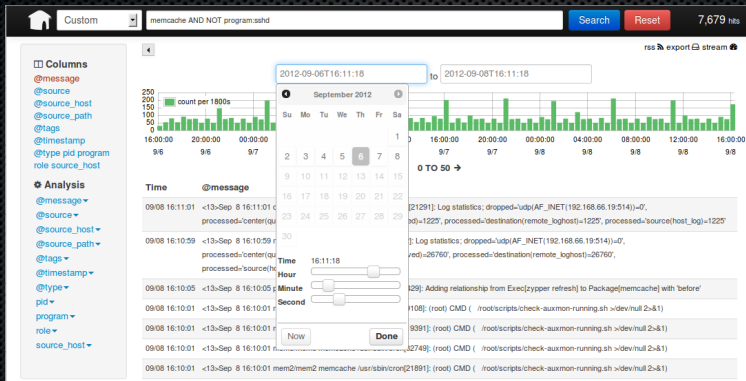Write_Redis Write_Riemann ZFS_ARC

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Logstash

- Ship logs from any source
- Filter them
- Index them
- Search them
- Backed with elasticsearch

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Kibana

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Statsd

- Stats aggregation
- Simple counters
- Flushes every XX seconds to graphite
- UDP

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Statsd

```
echo "stats.sshd.login:1|c" | nc -u statsd.example.com 8125
```

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Graphite

- Graphing
- A lot of helpers functions
- Listen on UDP and TCP

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Send data to graphite

```
echo "stats.sshd.login 1 $(date +%s)" | nc -u graphite.example.com 2003
```

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Graphite API

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

gdash

https://github.com/ripienaar/gdash

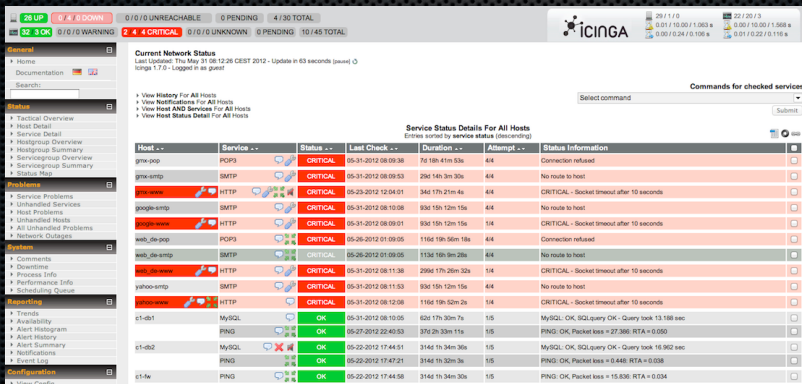Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga
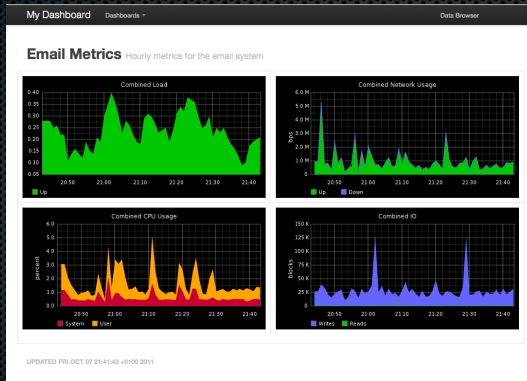
Icinga

- Fork of nagios
- Large and vibrant community
- Configuration compatible with nagios
- User-friendly interface
- Use Icinga Classic!

Introduction
Around monitoring
Tools
Conclusion

Collectd
Logstash
Statsd
Graphite
Icinga

Icinga

https://icinga.org

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

Toolchain from apache to nagios

- Apache ships logs to rsyslog
- Rsyslog ships logs to logstash
- Logstash ships metrics to statsd
- Statsd ships metrics to Graphite
- Icinga query metric from graphite
- https://github.com/etsy/nagios_tools

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

Reusing Icinga/Nagios perfdata

- Icinga performs various checks
- Icinga sends perfdata to graphite
- Graphite stores the data
- Gdash serves them inside dashboards
- https://github.com/roidelapluie/icinga-to-graphite

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

The metrics

- Everything can become a metric

- Performance metrics

- Usage metrics

- Business-valuable metrics

- People metrics

- Metrics are knowledge

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

Metrics that matter

http://codeascraft.com/2011/02/15/measure-anything-measure-everything/

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

What have we seen?

- We have seen only open-source software
- Small, pluggable daemons
- Robust solutions
- Nice & user-friendly output
- They play together
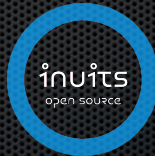- Plenty of other solutions I do not know

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

Try them yourself

https://github.com/KrisBuytaert/vagrant-graphite
https://github.com/KrisBuytaert/vagrant-puppet-logstash

Introduction
Around monitoring
Tools
Conclusion

They work together
Sharing
There are solutions

Contact

Julien Pivotto
julien@inuits.eu
@roidelapluie

INUITS bvba
Duboisstraat 50
2060 Antwerp
Belgium
+32 473 441 636
https://inuits.eu