

Monitoring at Cloud Scale

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Table of contents

- 1 Introduction
 - DevOps
 - monitoringsucks
 - monitoringsucks
- 2 Around monitoring
 - The cloud
 - The past
 - Environment
 - Challenges
 - Infrastructure as code
- 3 Tools
 - Collectd
 - Logstash
 - Statsd
 - Graphite
 - Icinga
- 4 Conclusion
 - They work together
 - Sharing
 - There are solutions



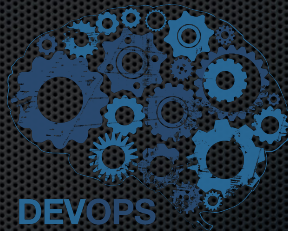
Julien Pivotto

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



What is that DevOps stuff again?

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



Damon Edwards and John Willis



#monitoringsucks

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



#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



What is different in the cloud?

- Scale
- Velocity
- More changes, more often



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



forget about. . .

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



Zabbix



forget about. . .

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



Centreon



forget about. . .

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GroundWork



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Cacti



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Hyperic



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BigBrother



forget about. . .

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Munin



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Zenoss



Your infrastructure today

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



Your infrastructure tomorrow

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



Your infrastructure in 6 months

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



Challenges

- Reproducibility
- Speed
- Metrics
- Orchestration



WANTED

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



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



WANTED

The UNIX philosophy



Automation

- One source of trust: puppet, chef, ...
- Exported resource
- Monitor in the same location you deploy
- Infrastructure-as-Code
- no autodiscovery tools



Automation

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



Example in puppet

- Create a definition for your application
- In that definition, add the configuration, the vhosts...
- Then export the monitoring (@@icinga_service)
- In bonus you can export DB configuration, etc...
- Use only the "meta" definition
- Collect the exported ressources (Nagios_service <||>)



Collectd

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



Collectd plugins

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



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



Logstash

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



<http://kibana.org/images/screenshots/searchss.png>



Statsd

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



Statsd

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



Graphite

- Graphing made simple
- A lot of helpers functions
- Listening on UDP and TCP
- Text over UDP/TCP

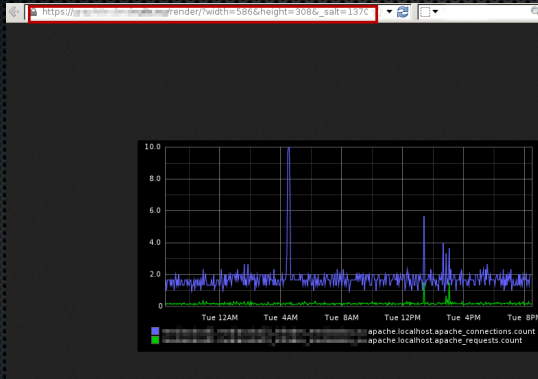


Send data to graphite

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

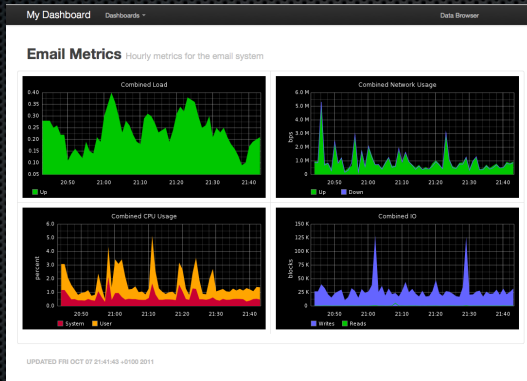


Graphite API



gdash

<https://github.com/ripienaar/gdash>



Icinga

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



Icinga

<https://icinga.org>

26 UP 0 / 1 DOWN 0 / 0 / 0 UNREACHABLE 0 PENDING 4 / 30 TOTAL
32 3 OK 0 / 0 / 0 WARNING 2 4 4 CRITICAL 0 / 0 / 0 UNKNOWN 0 PENDING 10 / 45 TOTAL

icinga 29 / 1 / 0 0.01 / 10.00 / 1.063 s 27 / 20 / 3 0.00 / 10.00 / 1.568 s
0.00 / 0.24 / 0.106 s 0.01 / 0.22 / 0.116 s

General

- Home
- Documentation
- Search:

Status

- Tactical Overview
- Host Detail
- Service Detail
- Hostgroup Overview
- Hostgroup Summary
- Servicegroup Overview
- Servicegroup Summary
- Status Map

Problems

- Service Problems
- Unhandled Services
- Host Problems
- Unhandled Hosts
- All Unhandled Problems
- Network Outages

System

- Comments
- Downtime
- Process Info
- Performance Info
- Scheduling Queue

Reporting

- Trends
- Availability
- Alert Histogram
- Alert History
- Alert Summary
- Notifications
- Event Log

Configuration

- Monitoring Profiles

Current Network Status
Last Updated: Thu May 31 08:12:26 CEST 2012 - Update in 63 seconds (pause)
icinga 1.7.0 - Logged in as guest

Service Status Details For All Hosts
Entries sorted by service status (descending)

Host	Service	Status	Last Check	Duration	Attempt	Status Information
gmx-pop	POP3	CRITICAL	05-31-2012 08:09:38	7d 18h 41m 53s	4/4	Connection refused
gmx-smtp	SMTP	CRITICAL	05-31-2012 08:09:53	29d 14h 3m 30s	4/4	No route to host
gmx-www	HTTP	CRITICAL	05-23-2012 12:04:01	34d 17h 21m 4s	4/4	CRITICAL - Socket timeout after 10 seconds
google-smtp	SMTP	CRITICAL	05-31-2012 08:10:08	93d 15h 12m 15s	4/4	No route to host
google-www	HTTP	CRITICAL	05-31-2012 08:09:01	93d 15h 12m 15s	1/4	CRITICAL - Socket timeout after 10 seconds
web_de-pop	POP3	CRITICAL	05-26-2012 01:09:05	116d 19h 56m 18s	4/4	Connection refused
web_de-smtp	SMTP	CRITICAL	05-26-2012 01:09:05	113d 16h 5m 28s	4/4	No route to host
web_de-www	HTTP	CRITICAL	05-31-2012 08:11:38	29d 17h 26m 32s	1/4	CRITICAL - Socket timeout after 10 seconds
yahoo-smtp	SMTP	CRITICAL	05-31-2012 08:11:53	93d 15h 12m 15s	4/4	No route to host
yahoo-www	HTTP	CRITICAL	05-31-2012 08:12:08	116d 19h 52m 2s	1/4	CRITICAL - Socket timeout after 10 seconds
c1-db1	MySQL	OK	05-31-2012 08:10:05	62d 17h 30m 7s	1/5	MySQL OK, SQLQuery OK - Query took 13.186 sec
	PING	OK	05-27-2012 22:40:53	37d 2h 33m 11s	1/5	PING OK, Packet loss = 27.36% RTA = 0.050
c1-db2	MySQL	OK	05-22-2012 17:44:51	314d 1h 34m 36s	1/5	MySQL OK, SQLQuery OK - Query took 16.962 sec
	PING	OK	05-22-2012 17:47:21	314d 1h 32m 3s	1/5	PING OK, Packet loss = 0.44% RTA = 0.038
c1-fw	PING	OK	05-22-2012 17:44:58	314d 1h 34m 30s	1/5	PING OK, Packet loss = 15.83% RTA = 0.034

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



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>



The metrics

- Everything can become a metric
- Performance metrics
- Usage metrics
- Business-valuable metrics
- People metrics
- Metrics are knowledge



Metrics that matter

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



What have we seen?

- We have seen only open-source software
- Small, pluggable daemons
- Robust solutions
- Nice & user-friendly output
- They play together



Homework

- SENSU
- RIEMANN
- EXTREMON
- ESPER
- SKYLINE
- OCLUS



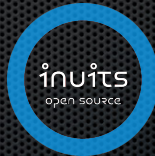
Try them yourself

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



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