

Monitoring at Cloud Scale

Julien Pivotto



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 - Sharing



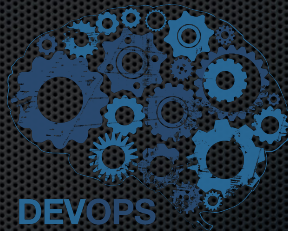
Julien Pivotto

- 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. . .

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Centreon



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GroundWork



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Cacti



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Hyperic



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BigBrother



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Munin



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Zenon



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!



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



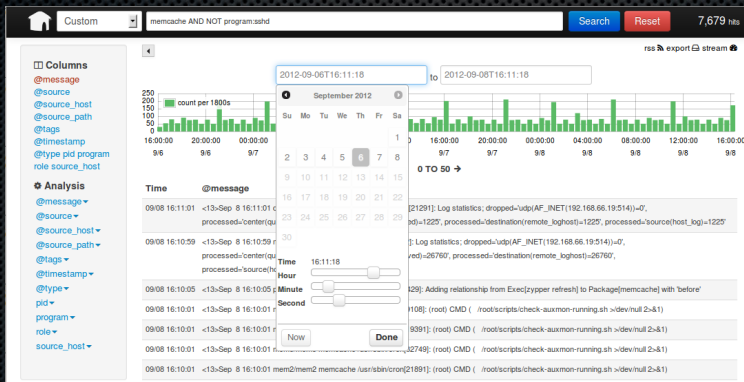
Logstash

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



Kibana

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



Statsd

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



Statsd

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



Graphite

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



Send data to graphite

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

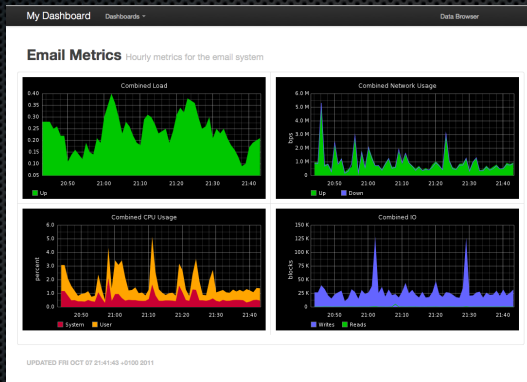


Graphite API



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 tools exist

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



The metrics

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



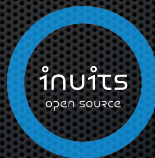
Metrics that matter

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



Contact

Julien Pivotto
julien@inuits.eu
@roidelapluie



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

