Testing a New Release Every 3 mins

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AVAST Software a.s.
Department map in Avast

Virus lab
perl

Cloud & Dev IT
java

Development
C++

Web
php

QA
python

?
Department map with QA dept.
Malware x AntiVirus Arms Race
Getting Updates from the Cloud

• AVAST Streaming Updates
• Pushing new virus definitions to clients continuously
• Hybrid solution, clients still pull two or three virus definitions during the day
• Virus definition generation:
  – Fully automated
  – 10 engines, 5 for streaming updates
  – Community based
• Backend:
  – High performance Java application, 40 millions concurrent connections
The Cloud distribution
The Backend

- 40 millions concurrently connected users
- 2 millions connections per server in peak
Testing The Cloud

- Every streaming update has to be tested
- Integrate smoke tests into existing viruslab infrastructure
- Build infrastructure implemented in perl
- Every 3-5 minutes, small package of virus definitions is distributed to over 200 million users
  - But, do not break their computers
Test Automation Server

- Virus lab
- perl
- Job execution
- Job result
- REST API
- QA Test Automation Server
- STAF
- Python
- Development
- C++
- VirtualBox
- Virtual Clients
- C#
- C++
- Functional test execution
- STAF
- VM Control
- Test execution
- Test result
- Virus definition testing
- Server backend testing
- Cloud & Dev IT
- java
- Test execution
- Test result
- Virus definition release
Jenkins – Test Automation Server

• Centerpiece of our testing infrastructure
• We use Jenkins CI
  – An extendable open source continuous integration server
    • Runs and monitors repeated jobs, e.g. builds software projects
  – Main features:
    • Quick setup and configuration
    • Test results reporting, archiving
    • File fingerprinting
    • Tons of existing plugins
    • And much more
The Cloud - solution

- Functional (or integration?) tests implemented in C#
- Tests have to be 100% reliable …
- The environment: Windows OS guests in VirtualBox
- Remote test execution using STAF framework
- Integration of Jenkins job into the perl build script using Jenkins REST API
The Cloud

Virus lab
perl

ok

Local Cloud

Jenkins - QA
STAF

Cloud

REST API

Test execution
Test result

Virus definition release

Package delivery

Test execution
Test result

Package
Delivery

Virtual Client

160 mil users

www.avast.com
Conclusion

• Even integration tests can be:
  – Fast
  – Reliable
  – Fully automated

• Do not take “it cannot be tested” as an answer
Questions and Answers

Contact info

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Appendix - Technologies

• Jenkins  http://jenkins-ci.org/
  – Parametrized Trigger Plugin
  – Build Pipeline Plugin
  – Robot Framework Plugin

• STAF  http://staf.sourceforge.net/

• VirtualBox  https://www.virtualbox.org/

• Sikuli  http://www.sikuli.org/

• Selenium  http://www.seleniumhq.org/