Monitoring 7000+ hosts in Zabbix

Automate all the things
Today we’re talking about...

• Zabbix Deployment
• Automation
About me

• Kinetic IT are a Managed Service Provider in Australia

• I work as a Senior Engineer in the Tools and Automation team at WA
  Department of Education

• Blog: http://cavaliercoder.com/

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WA Department of Education

Managing over **120,000 devices**
for approx. **400,000 people**
in **800 schools**

With **1500 heterogeneous servers**
**Hub-spoke topology**
Across **2.7 million km²**

**FACT:**
Germany can fit into WA 7 times!
Production stats

7000+ Hosts  1.5M Items  450K Triggers  2K NVPS
Zabbix topology

- Physical Zabbix server Dell R720 64GB memory
- Physical PostgreSQL server Dell R720 256GB memory
  - Local SSD in RAID 10
  - SAN attached storage for Tier 2 and archival data
  - PostgreSQL partitioning
- Virtual Web server for users
- 2\textsuperscript{nd} Virtual Web server with high memory and long session optimisations for batch processing
Why automate?

So we can spend time adding value!
Why automate?

• We want to spend our time:
  o Improving monitoring quality and coverage
  o Improving Event Management
  o Improving BI and capacity planning
  o Enhancing the user experience

• Not:
  o Adding/removing users and hosts
  o Keeping dev/test/prod in sync
Build Pipeline

- Provision Dev in Vagrant
- Build and configure with Puppet Enterprise
- Store all code in GitLab
- Package custom binaries with RPM and WiX
Build Pipeline

- Puppet keeps Vagrant, dev, test and production identical
- Rebuild on a whim (Cattle, not pets)
Build Pipeline

• Nightly builds
  o Team City
  o Vagrant
  o Cucumber
Host and User Management

- Hourly cron jobs
- Modelled ‘views’ from data sources
- Remediate differences via Zabbix API
User Management

- INI file configuration
- Define LDAP groups
- Script queries AD/LDAP
- Sync users/groups via Zabbix API
Host Management

- XML configuration of data sources and views
- Query hosts in CMDB via SQL
- Sync hosts, groups, templates and trigger dependencies via Zabbix API
SNMP Template Generator

- Parses MIB files
- Generates Zabbix Template XML files
- [https://github.com/cavaliercoder/mib2zabbix](https://github.com/cavaliercoder/mib2zabbix)

\$ mib2zabbix.pl --enable-items --oid 1.3.6.1.2.1.2.2 > template.xml
PDH Template Demonstration

- PowerShell Module
- Query performance counter API
- Generates Zabbix template XML
- [https://github.com/cavaliercoder/ZabbixTemplates](https://github.com/cavaliercoder/ZabbixTemplates)

> Export-CounterSetToZabbixTemplate -CounterSet LogicalDisk,PhysicalDisk | Out-File template.xml
• Multi-threaded Go binary
• Queries the Zabbix Agent
• Test for performance and stability
• [https://github.com/cavaliercoder/zabbix_agent_bench](https://github.com/cavaliercoder/zabbix_agent_bench)
Modules, why bother?

- Better performance
- Simpler packaging
- Smaller footprint
# test built-in item
$ zabbix_agent_bench -key agent.ping

# test simple fork
$ zabbix_agent_bench -key "system.run[/bin/echo 1]"

# test simple script
$ zabbix_agent_bench -key "system.run[/usr/bin/python -c 'print 1']"

# test module item
$ zabbix_agent_bench -key dummy.ping

# regression test multiple keys for CI/CD
$ zabbix_agent_bench -iterations 1 -strict -keys appkeys.conf
References

Kinetic IT  

ZabbixTemplates - Powershell module  
https://github.com/cavaliercoder/ZabbixTemplates

mib2zabbix – SNMP Template generator  
https://github.com/cavaliercoder/mib2zabbix

zabbix_agent_bench – Agent benchmark tool  
https://github.com/cavaliercoder/zabbix_agent_bench

WiX MSI template for Zabbix Windows Agent  
https://github.com/cavaliercoder/zabbix-msi

PostgreSQL agent module  
https://github.com/cavaliercoder/libzbxpgsql
Many thanks