Automation over 100’s diff envs

Max Bubenick
MS Platform Lead
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Who I am?

- Working @ Percona since 2013
  - Sr DBA
  - Manager
  - Platform Lead
- Past Work Experience
  - Developer
  - SysAdmin
  - Data Architect / DBA

What our platform does

- Monitoring / Alerting
- Backups
- High Availability
- Procedures
- Tooling

Why?

To Avoid:

- Long operational times on repetitive tasks
  - Inefficient for business
  - Boring for engineers
- Non standard procedures
  - Same task but diff procedure per environment
  - Keep off SOP documentation
  - Human errors

The path to CD

- Goal
  - Automation
  - Standardization
  - Flexibility to run on any customer environment
  - Focus on security
  - Reduced DB servers requirements

The path to CD

- Ansible / Python
- Github
- Jenkins
- CMDB
- Continuous Deployment
- ELK / Kibana
- Open Source collab

Ansible

- Inventory
  - Use directories instead of flat files
  - This allows multiple sources to work with it

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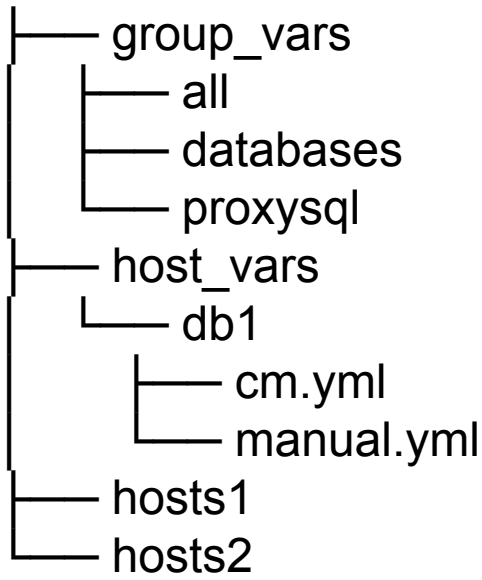


Ansible

- Security
  - Always use vault for secrets
  - Hashi_vault for external
  - Be aware encrypting in-line as ansible_inventory will break
  - Local vault key stored remotely
  - no_log when sensitive data

Ansible

- Roles
  - Vars are constants!!!!!! (defaults are vars)
  - Use defaults instead of hardcoded tasks
  - Split when tasks could duplicate
    - Use dependencies (meta)
  - Split into OS families (RedHat & Debian)
    - include_tasks: {{ ansible_os_family.yml }}

Ansible

- Tasks
  - Always check for a module instead of shell or command
  - Command unless pipe, redirect … then shell
  - Avoid always changing tasks
  - Use tags to allow subset runs

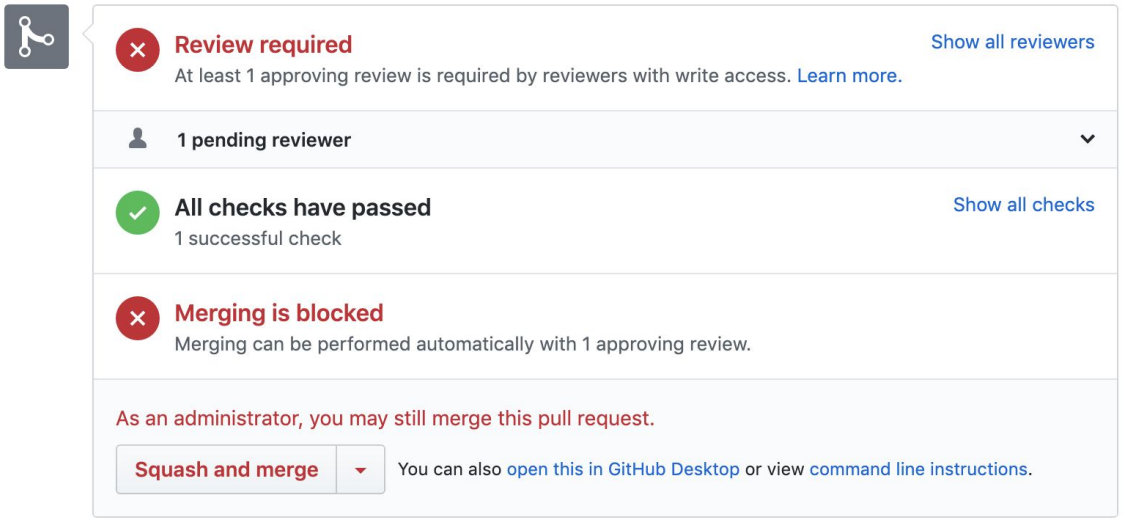
Ansible

- Complex flows
  - Use python ansible libraries

```
from ansible.executor.task_queue_manager import TaskQueueManager

from ansible.inventory.manager import InventoryManager

from ansible.module_utils._text import to_bytes

from ansible.parsing.dataloader import DataLoader

from ansible.parsing.vault import VaultSecret

from ansible.playbook.play import Play

from ansible.plugins.callback import CallbackBase

from ansible.vars.manager import VariableManager
```

GitHub

- Block commits to master
- Use pull requests
  - Force tests
  - Force peer approval (code ownership)



GitHub

- Local pre-commit hooks
- Split large code changes/additions
- Do not keep PR open for long
- Master branch always ready for release
- Releases
  - Use tags
  - Then you can build from tag

Jenkins

- Monitoring GitHub for new PRs and commits
- Run tests and report back to GitHub
  - Try to test only what changed
    - nosetests
    - pylint
- Build packages on new tags
- Push packages to rpm/deb repositories
- Have minimum needed plugins (lot of sec warnings)

More on tests

- Jenkins only tests for new code additions
- For continuous integration testing we do
  - Dedicated environment
  - Running code from master branch
  - Reporting back to a central place

CMDB

- Central place to manage all inventories
- Developed in house
- API for both ways communication
- Red button !

ELK

- Central events database
- All automation tasks reporting back to it
- Predefine indexes
- Use aliases to simplify index rotation

Continuous Deployment

- Service continuously running on environment central host
- Applies all automation in a complex flow
- We use a canary approach for safety
- Every run reports back to central place
- No_log in place for every task that could log sensitive data
- It runs even if not new releases

Kibana

- Clear dashboards to have a fast overview on automation status
- Extend on details when PROBLEM
- Visualize
  - running times
  - package versions
  - Count diff reporters

Miscellaneous

- Keep it simple
- Documentation is key
- NPI process
- Open communication channels

Open Source Collaboration

- mydumper
- ProxySQL
- Orchestrator
- PMM
- ...
- *MHA*
- *PMP*

Thank you!

Q & A

Contact me:

max.bubenick@percona.com

@maxbube

https://github.com/maxbube

SAVE THE DATE

30 Sept - 2 Oct 2019

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