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OPEN SOURCE SUMMIT
EUROPE

Automated Testing for Infrastructure-as-a-code

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Automated Testing for Infrastructure-as-a-code

- $ ls *
    - $ id; groups
    - $ last
    - $ rpm -qa
    - $ ps aux
    - $ git commit
    - $ exit 0
    - $ exit 1
    - $ ./run.sh
    - $ logout

id

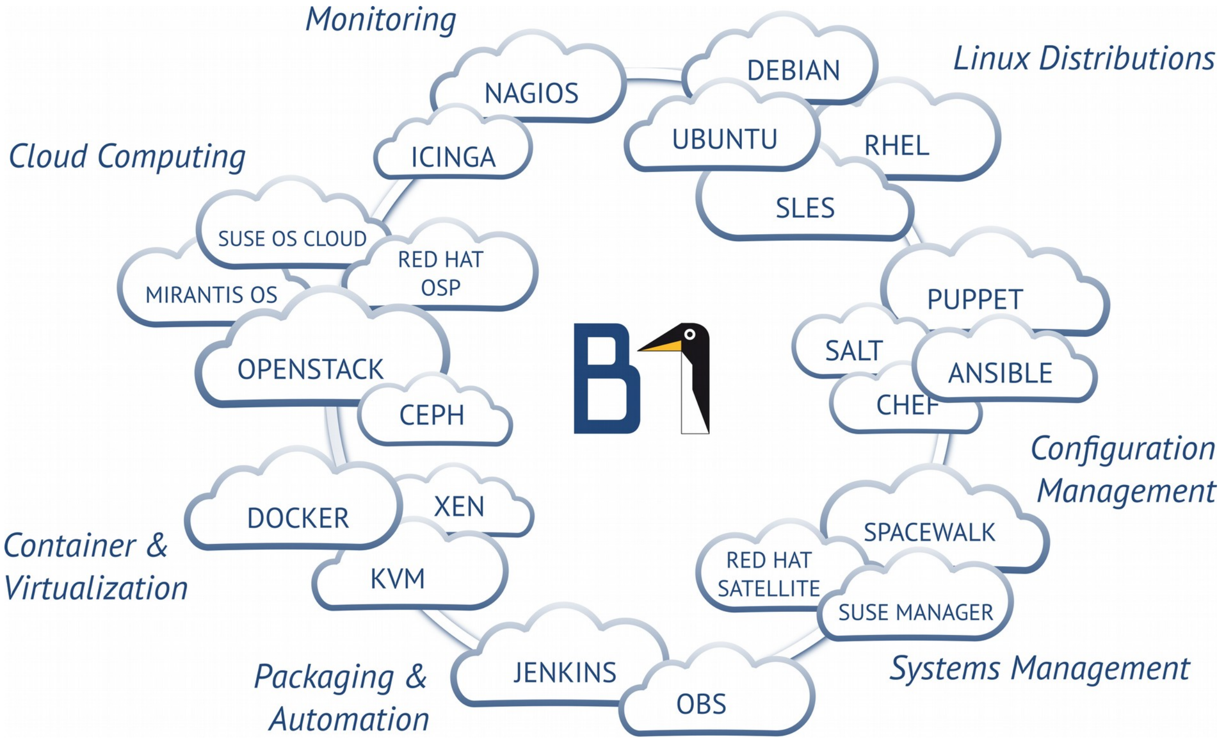
- Florian Winkler
  - European
  - born in West-Berlin
  - likes penguins, cats and bears
  - likes good food and drinks
  - loves to cook
  - frequent festival visitor

id

- Florian Winkler
  - started with Basic on C64
  - Linux since 1999
  - Professional since 2008
  - Trainer since 2010
  - B1 Systems since 2014
    - Consultant
    - Trainer
      - SCI, LF Approved

groups

- B1 Systems GmbH
  - founded in 2004
  - operating both nationally and internationally
  - about 100 employees
  - offices in Rockolding, Berlin, Cologne & Dresden
  - vendor-independent (hardware and software)
  - focus:
    - consulting
    - support
    - development
    - training
    - operations
    - solutions



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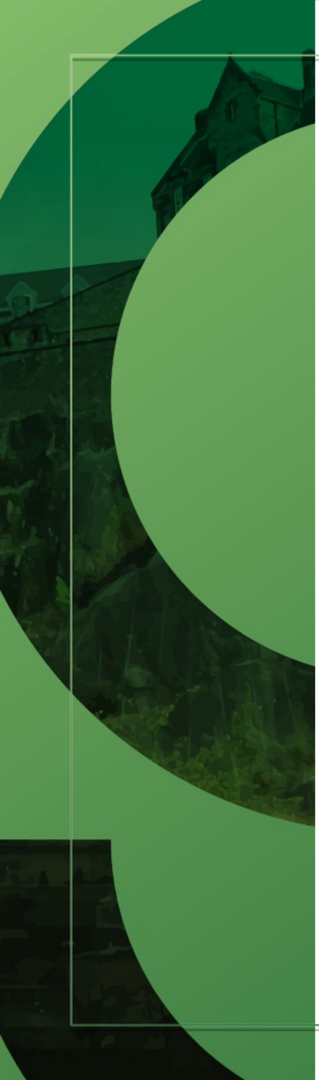
last

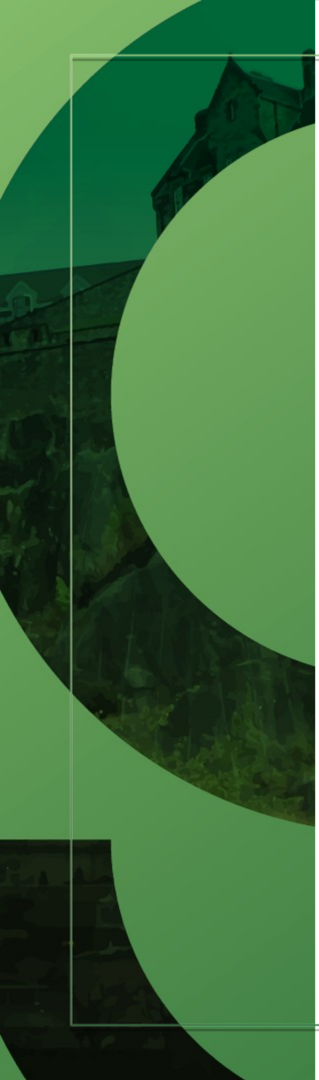
- DC Management like we are used to
  - Management
  - Developers
  - QA
  - L1, L2, L3 Operations
  - ticket based workflows
  - or even worse...



Things are changing...

Just Buzzwords(?)

- New ideas
  - $-as-a-service
  - agile
  - DevOps
  - hybrid
  - Hyperconverged (sic!)
- Bingo!



Lets have a look at the tools.

rpm -qa

- Source Code Management
  - git
  - svn
  - cvs
  - mercurial

rpm -qa

- Predefined Installation
  - kickstart
  - AutoYAST
  - preseed

rpm -qa

- Software and Images
  - Koji
  - Open Build Service
  - Kiwi

rpm -qa

- Installation Tools
  - Cobbler
  - The Foreman
  - FAI

rpm -qa

- Configuration Management
  - CFEngine
  - Puppet
  - Chef
  - Ansible
  - SaltStack

rpm -qa

- Enterprise Tools
  - RedHat Satellite
  - SUSE Manager
  - Spacewalk

rpm -qa

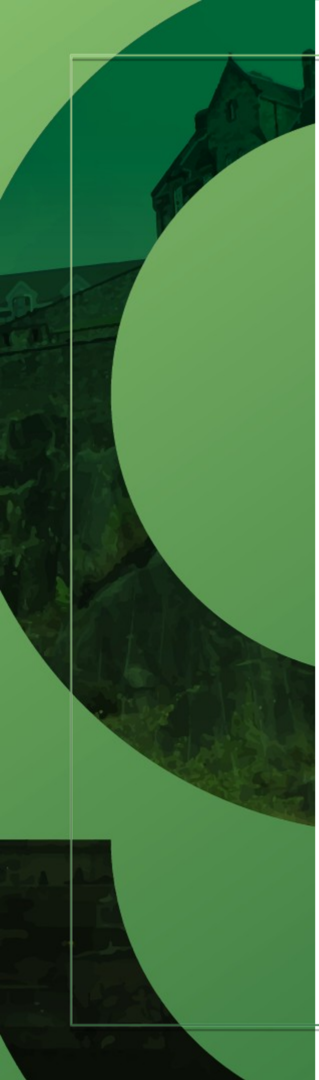
- Containers
  - LXC
  - Docker
  - BSD Jails
  - Solaris Zones

rpm -qa

- IaaC Tools
  - docker-compose
  - Docker Swarm
  - Kubernetes
  - vagrant
  - terraform

rpm -qa

- Continuous Integration/Deployment
  - Jenkins
  - Travis
  - Gitlab CI



Wow, that‘s a lot...

ps aux

- Considerations
  - do NOT let the tools define your work
  - define a goal
  - check your workflows
  - find the appropriate tools
  - make these tools work for you
  - automate

ps aux

- DevOps
  - Mindset
  - close collaboration
  - small teams
  - Staging
    - Dev
    - Trial (optional)
    - Staging
    - Prod
  - automated tests
  - fast deployments

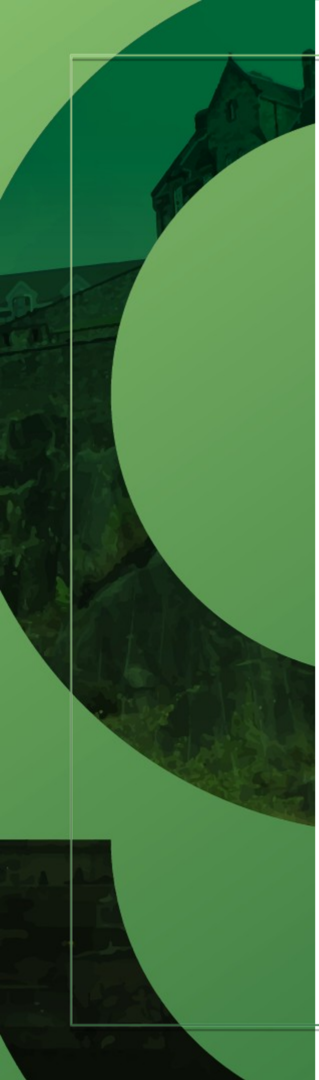
ps aux

- git

  - central code repositories
  - full access control
  - Intelligent merging mechanisms
  - branches

ps aux

- Jenkins
  - central automation tool
  - feature rich
  - lots of plugins
  - different types of workers
  - variety of notifications
  - plugins for variuos ticket systems



But how does it work for me?

git commit

- SCM polling
  - code is commited
  - Jenkins polls the repo(s)
  - code is checked out if changed
  - defined build steps are executed
  - notification is send out
  - successful build can trigger other project to be build

git commit

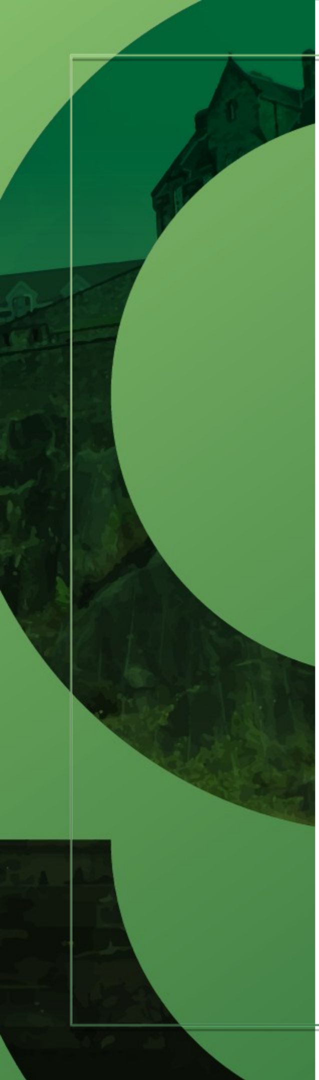
- GitHub hook
  - code is commited
  - GitHub hook triggers new build in Jenkins
  - code is checked out
  - defined build steps are executed
  - notification is send out
  - successful build can trigger other project to be build

git commit

- External Build Trigger
  - a special URL is called
  - triggers a new build in Jenkins
  - code is checked out
  - definded build steps are executed
  - notification is send out
  - successful build can trigger new projects to be build

git commit

- Ticket based Workflow
  - ticket is created/updated
  - triggers a new build in Jenkins
  - code is checked out
  - defined build steps are executed
  - ticket is updated/closed on success
  - successful build can trigger other project to be build



And that‘s all the magic?

exit 0

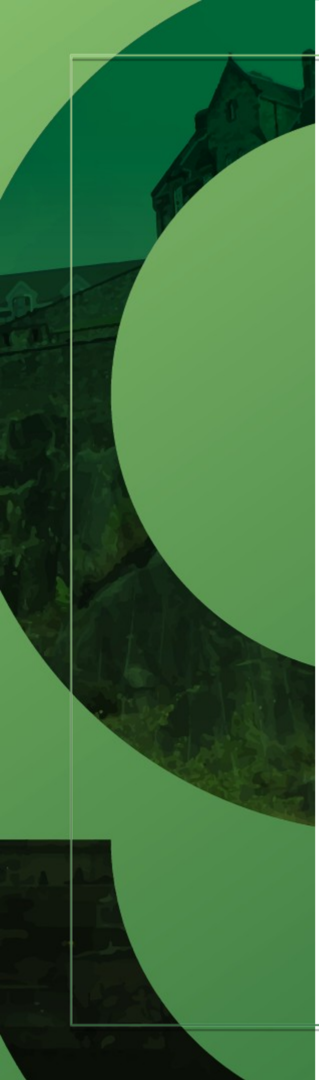
- Automated workflow example (1/3)
  - code is written/changed
  - code is commited to dev branch
  - ticket is automatically created
  - dev branch is checked out
  - tests are executed
    - i.e. syntax, linting
  - code is merged into trial branch
  - ticket is updated

exit 0

- Automated workflow example (2/3)
  - trial branch is checked out
  - tests are executed
    - i.e. integration tests
  - code is merged into staging branch
  - ticket is updated

exit 0

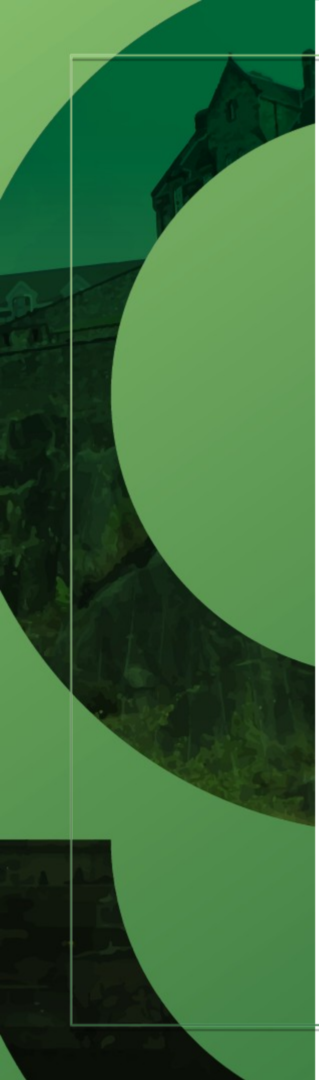
- Automated workflow example (3/3)
  - Staging branch is checked out
  - Tests are executed
    - i.e. customer acceptance tests
  - Code is merged into prod/master branch
  - Ticket is closed



But things break up...

exit 1

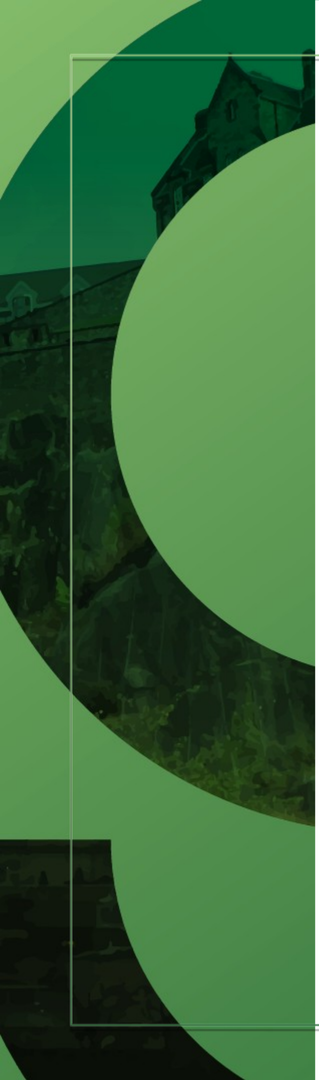
- Something went wrong...
  - $test is not successful
  - responsible person/team is informed
  - code is getting fixed and commited
  - code is being checked out
  - tests run again



Demotime?

./run.sh

- Demo (if we still have enough time)



Questions?

Stay in touch?

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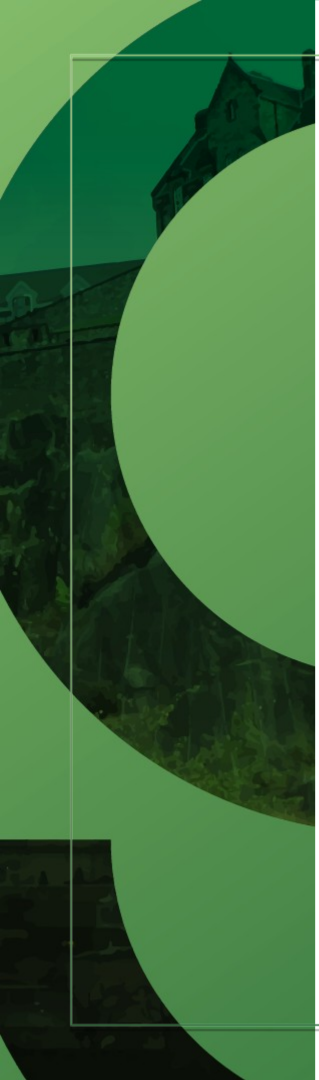
  - winkler@b1-systems.de
  - info@b1-systems.de
  - training@b1-systems.de
  - @b1systems
- @pinguintiger (private, non-technical, mostly german)



Thank you!

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