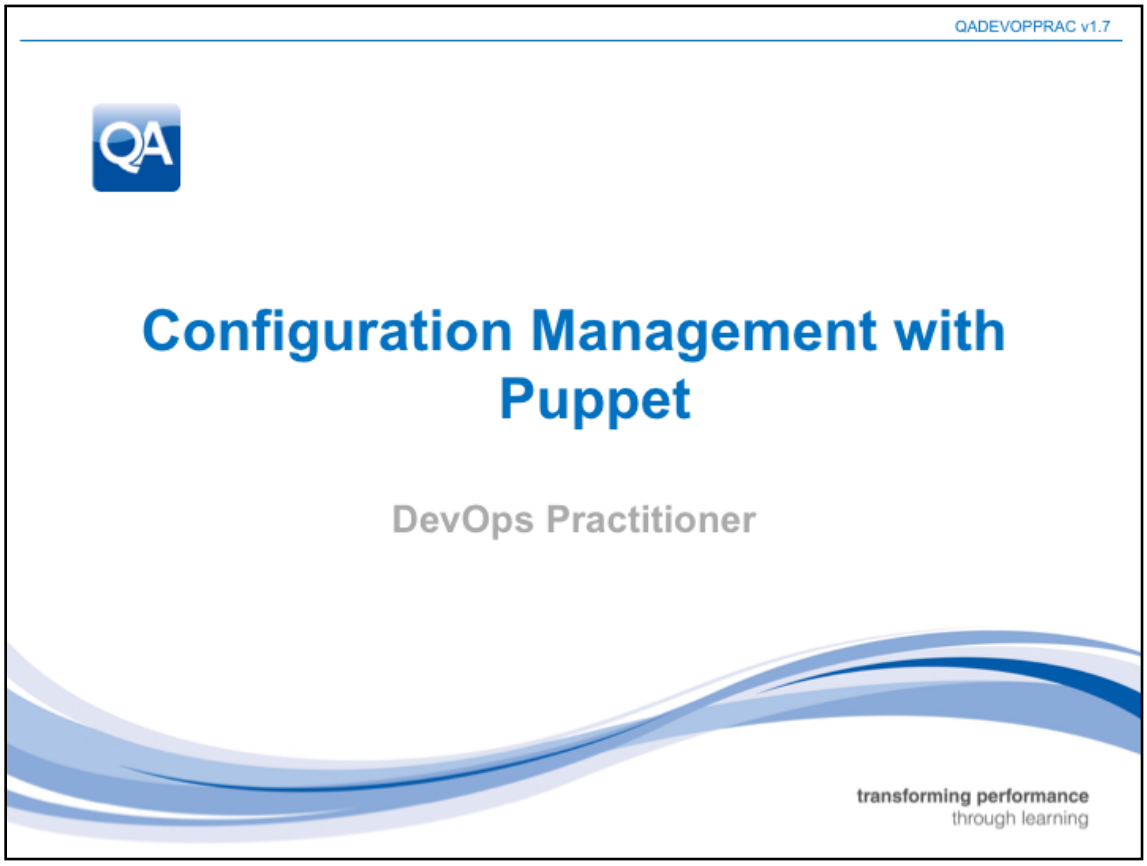
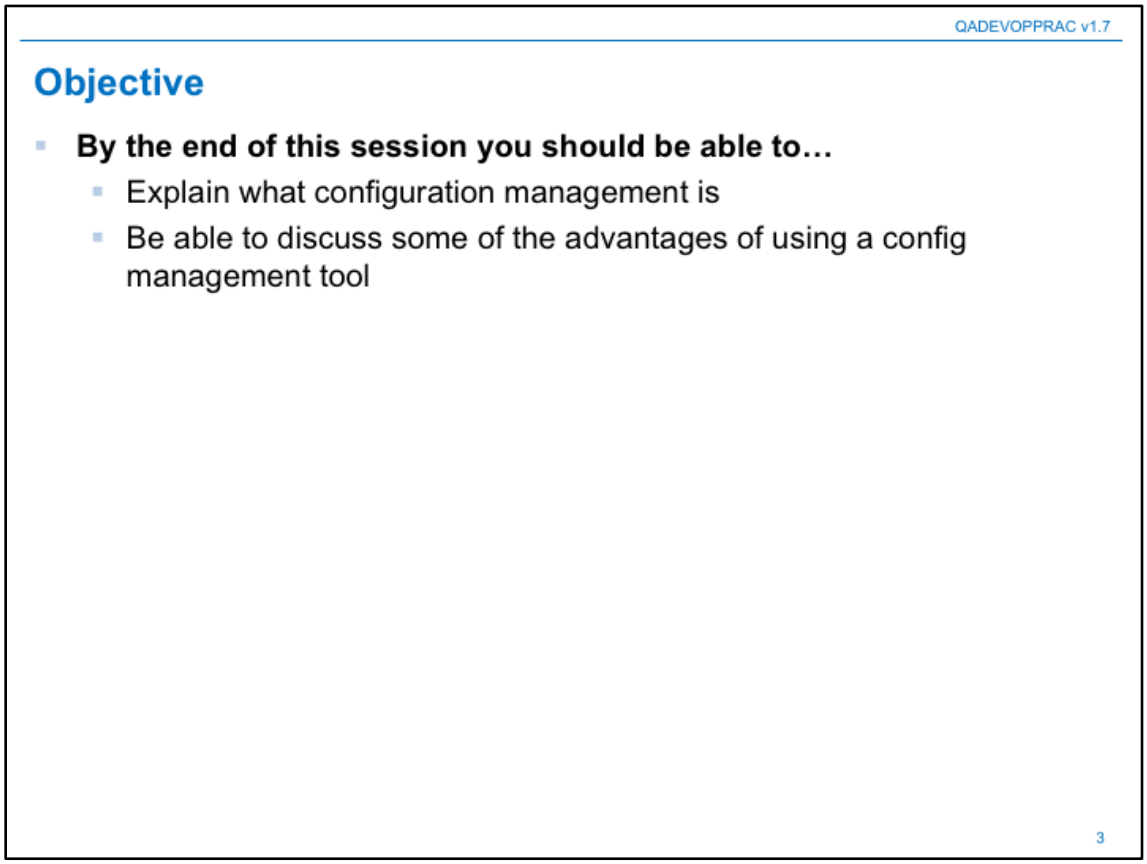
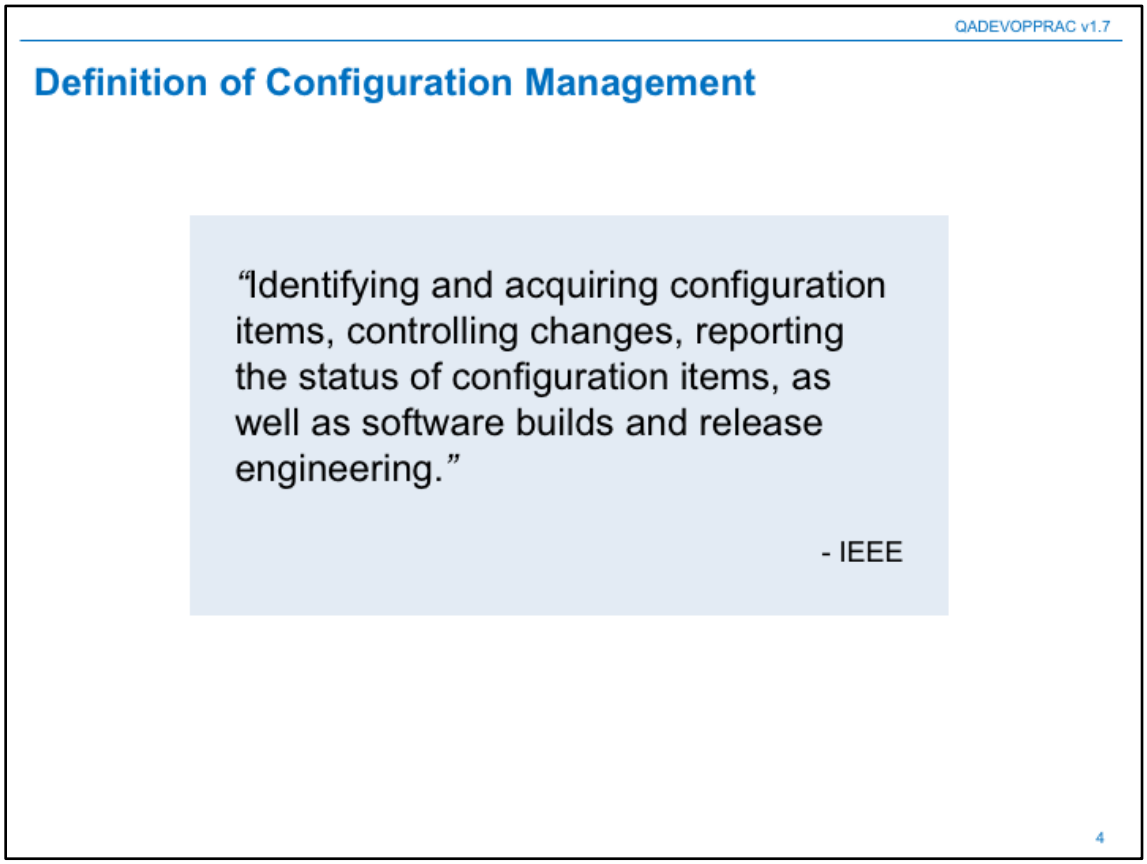

QADEVOPPRAC v1.7
Configuration Management with Puppet
DevOps Practitioner
transforming performance
through learning

## Outline

- **What is configuration management**
  - Aims and advantages
  - Different tools available
- **Introduction to Puppet**
  - What is puppet
  - How does puppet work
- **Master / Agent setup**
  - Installing puppet enterprise
  - Installing from repositories

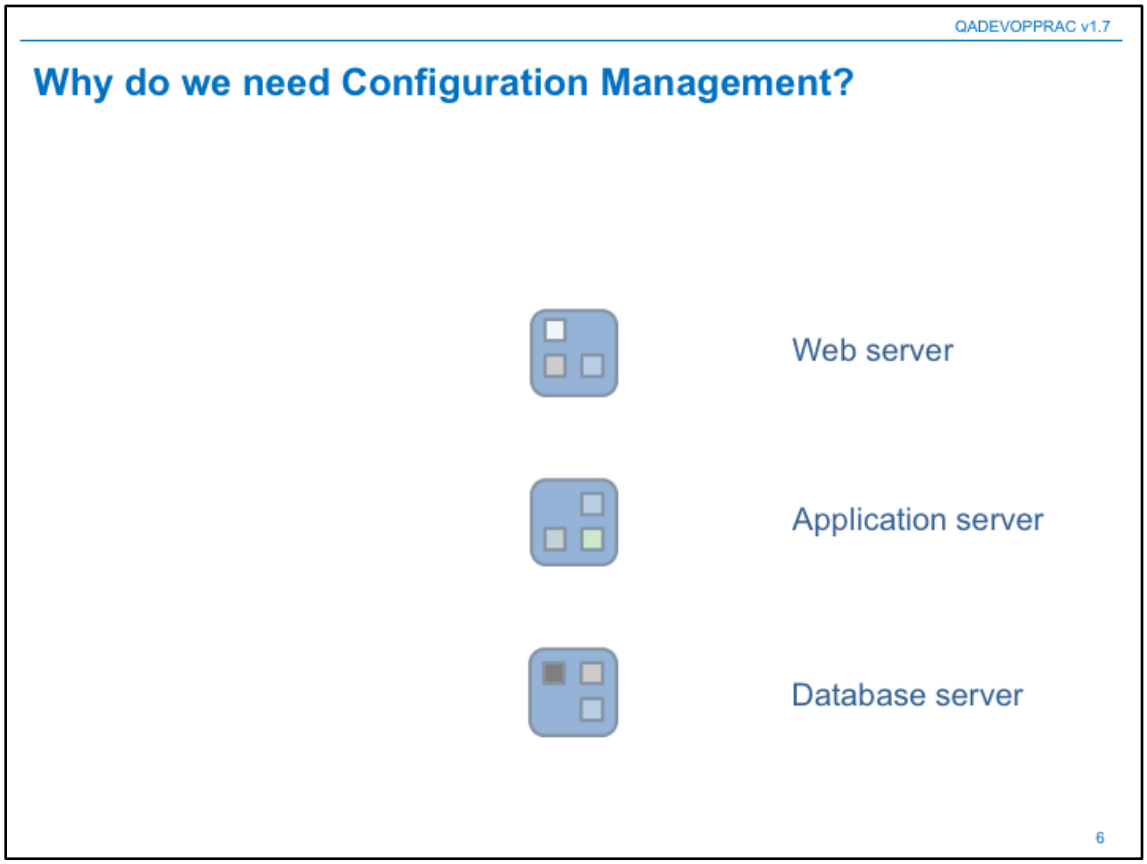

QADEVOPPRAC v1.7
Objective
By the end of this session you should be able to…
Explain what configuration management is
Be able to discuss some of the advantages of using a config management tool
3




http://standards.ieee.org/findstds/standard/828-2012.html

## Why do we need Configuration Management?

**Initial build and bootstrapping**

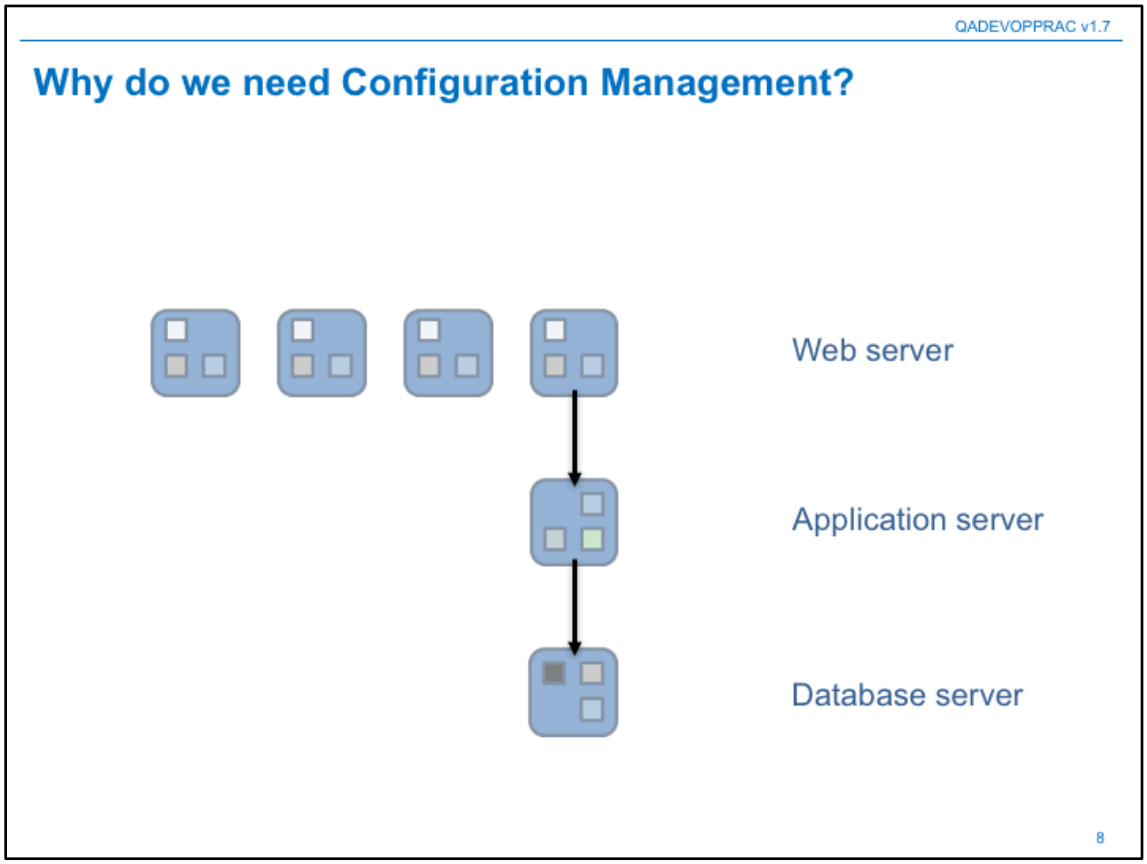

QADEVOPPRAC v1.7
Why do we need Configuration Management?
Web server
Application server
Database server
6

## Why do we need Configuration Management?

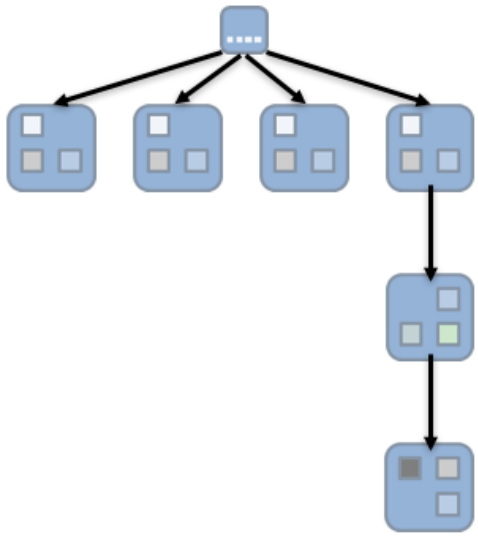
Web server

Application server

Database server


QADEVOPPRAC v1.7
Why do we need Configuration Management?
Web server
Application server
Database server
8

## Why do we need Configuration Management?



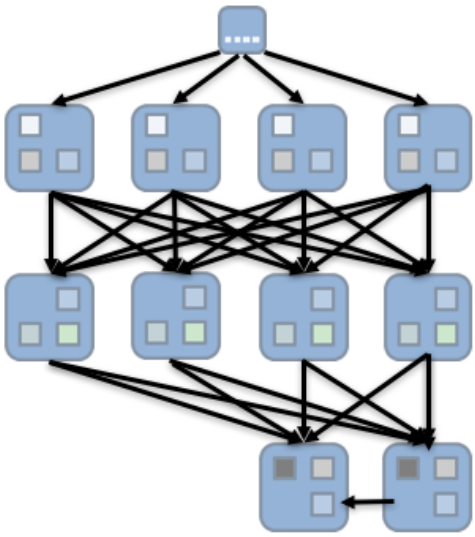
Load balancer

Web server

Application server

Database server

## Why do we need Configuration Management?



Load balancer

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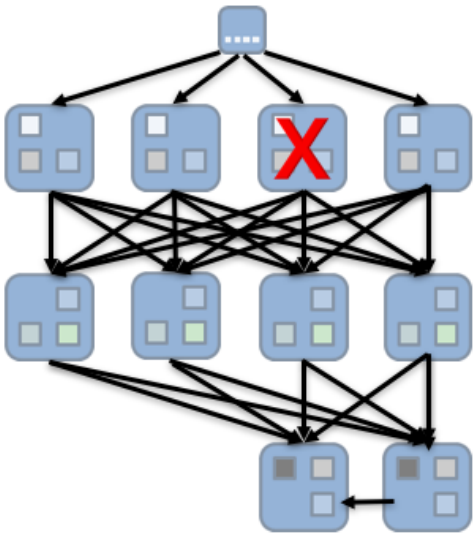
Database server

## Why do we need Configuration Management?



Load balancer

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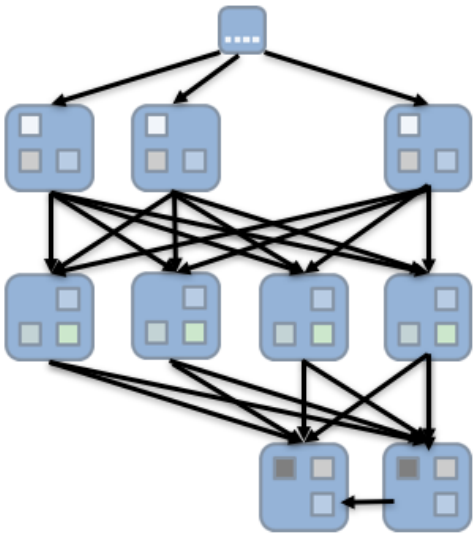
Application server

Database server

## Why do we need Configuration Management?



Load balancer

Web server

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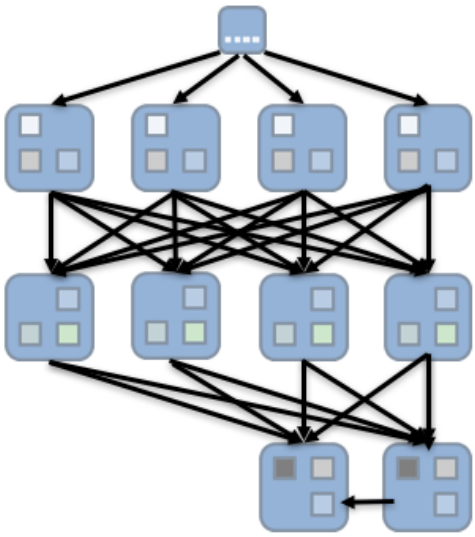

Load balancer

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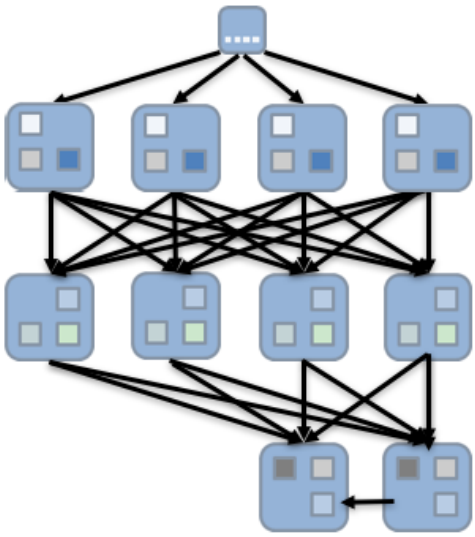
## Why do we need Configuration Management?



Load balancer

Web server

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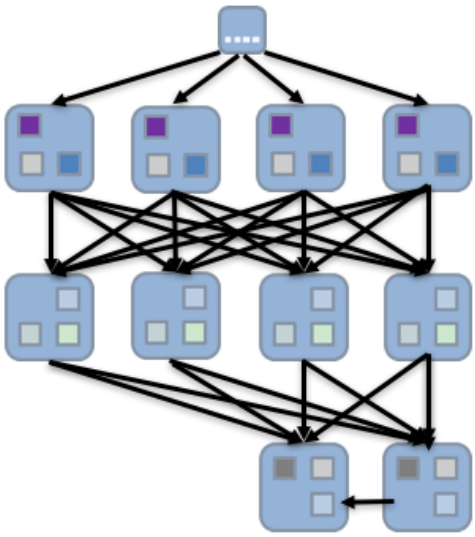
## Why do we need Configuration Management?



Load balancer

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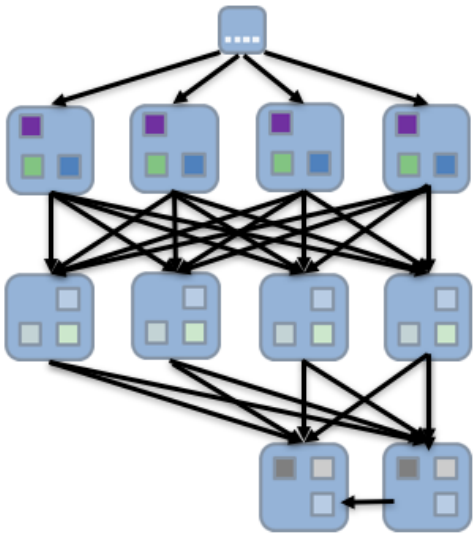
## Why do we need Configuration Management?



Load balancer

Web server

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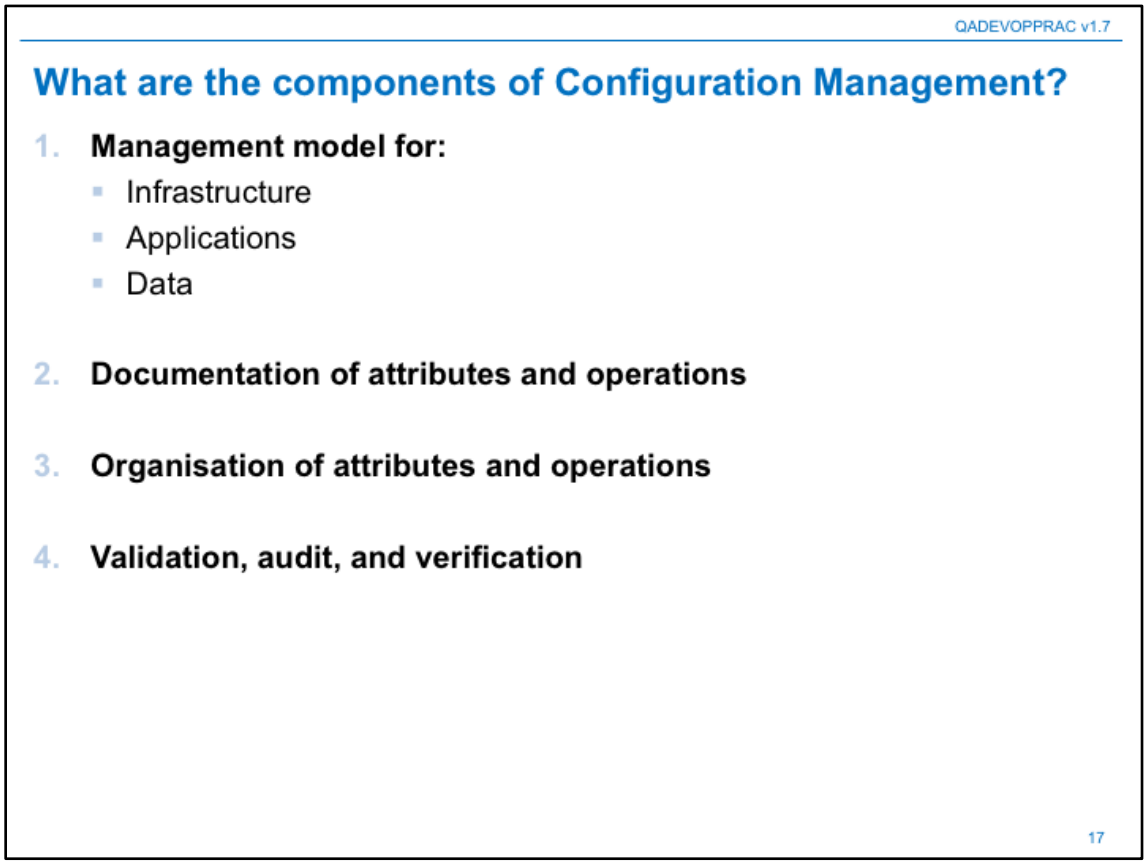
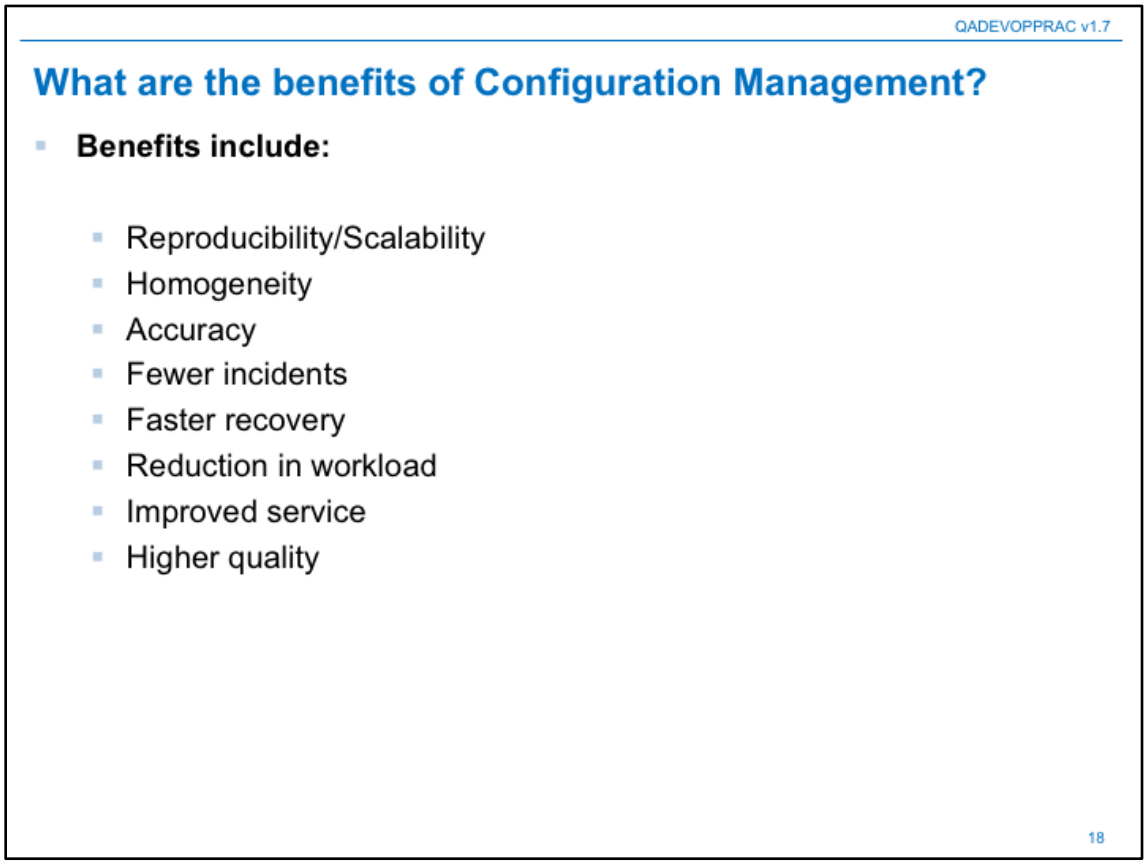
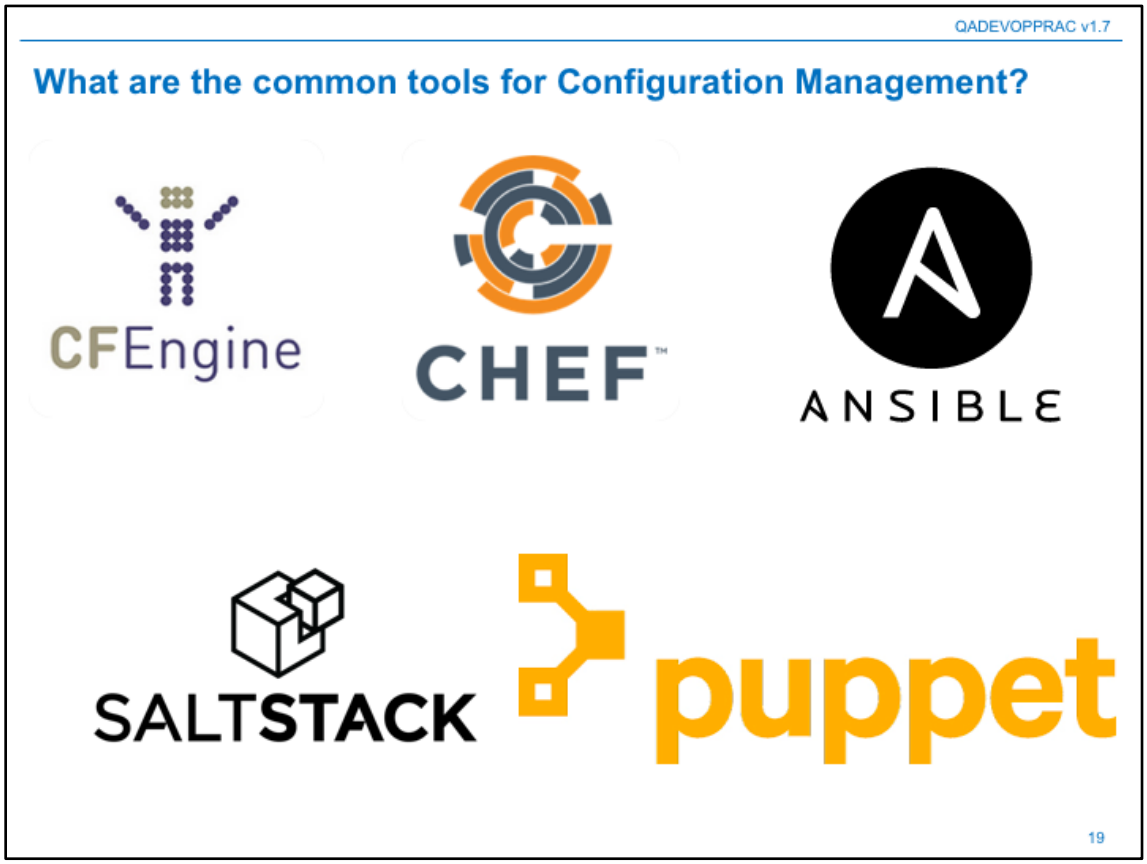


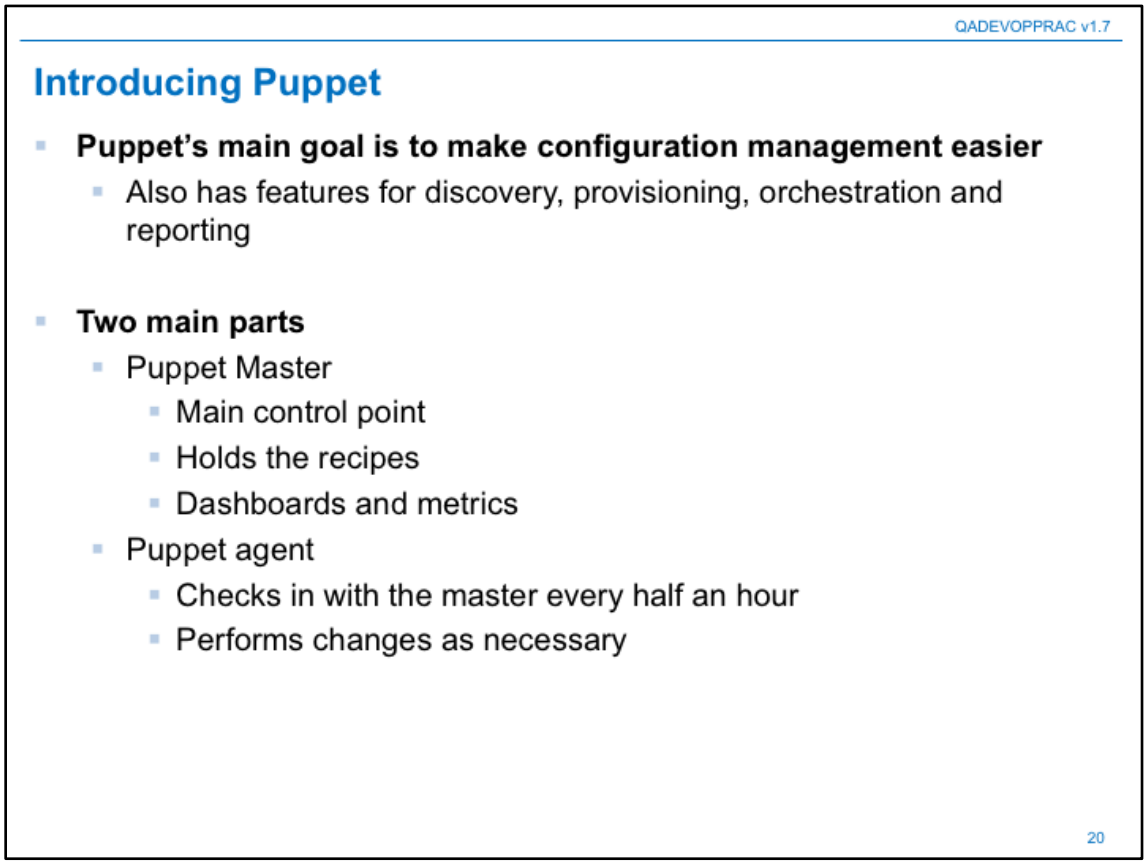

4 things we need to know to build good config management:

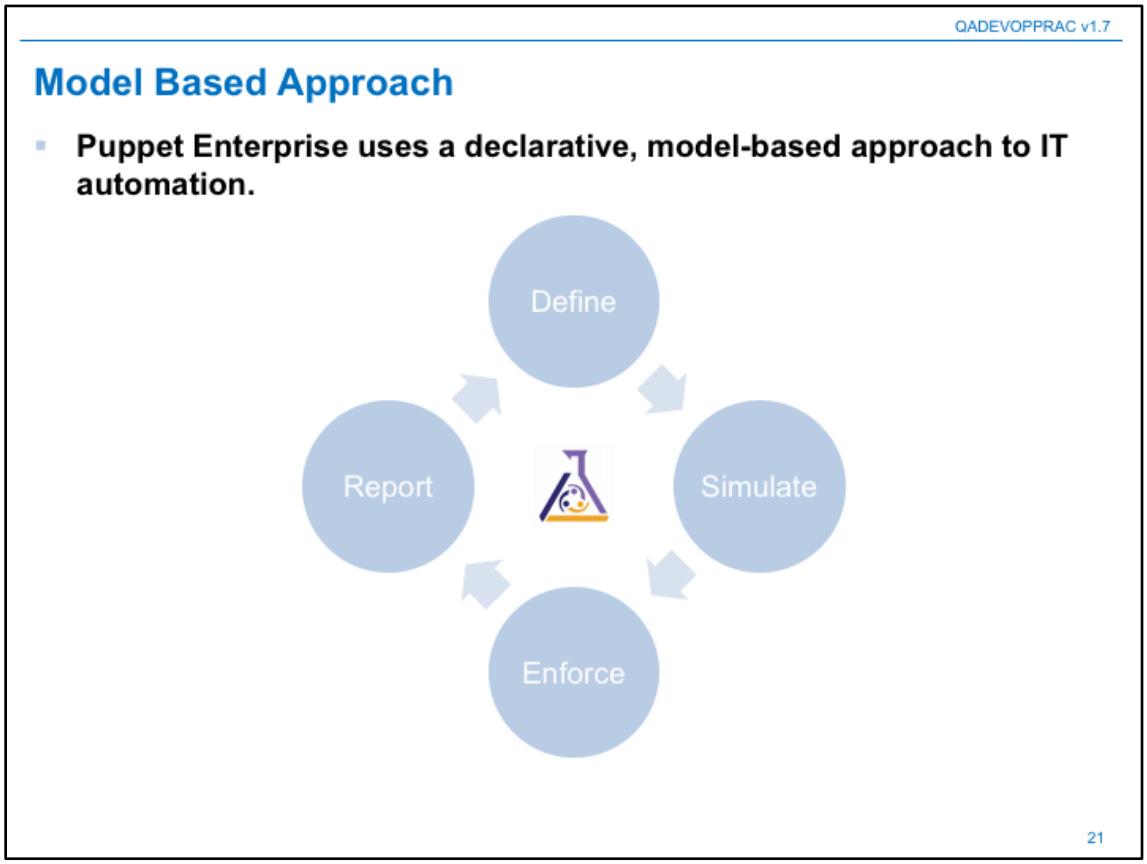
1. Infrastructure: what infrastructure, applications and data we need to have
2. Documentation of the operations of the machine – was in state A, after update is in state B. it should to be done auto.
3. We need to be able to say with version of the software/libs/attributes we need to have on machine (e.g. java 7 rather java 8
4. Verification should be done to know what is our machine (software, libs, updates, status…)




Homogeneity -


QADEVOPPRAC v1.7
What are the common tools for Configuration Management?
CFEngine
CHEF
ANSIBLE
SALTSTACK
puppet
19


QADEVOPPRAC v1.7
Introducing Puppet
Puppet's main goal is to make configuration management easier
Also has features for discovery, provisioning, orchestration and reporting
Two main parts
Puppet Master
Main control point
Holds the recipes
Dashboards and metrics
Puppet agent
Checks in with the master every half an hour
Performs changes as necessary
20



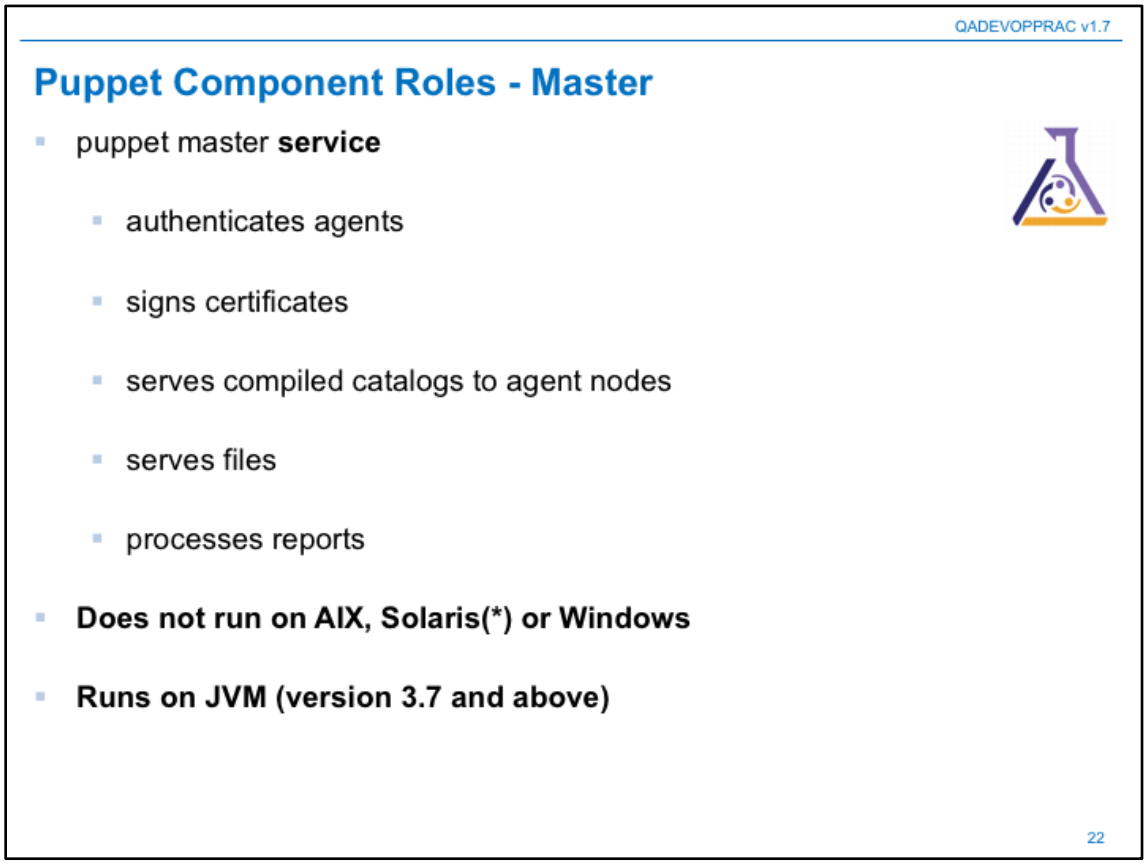

Puppet Enterprise uses a declarative, model-based approach to IT automation.

1. Define the desired state of the infrastructure's configuration using Puppet's declarative language.

2. Simulate configuration changes before enforcing them.

3. Enforce the deployed desired state automatically, correcting any drift.

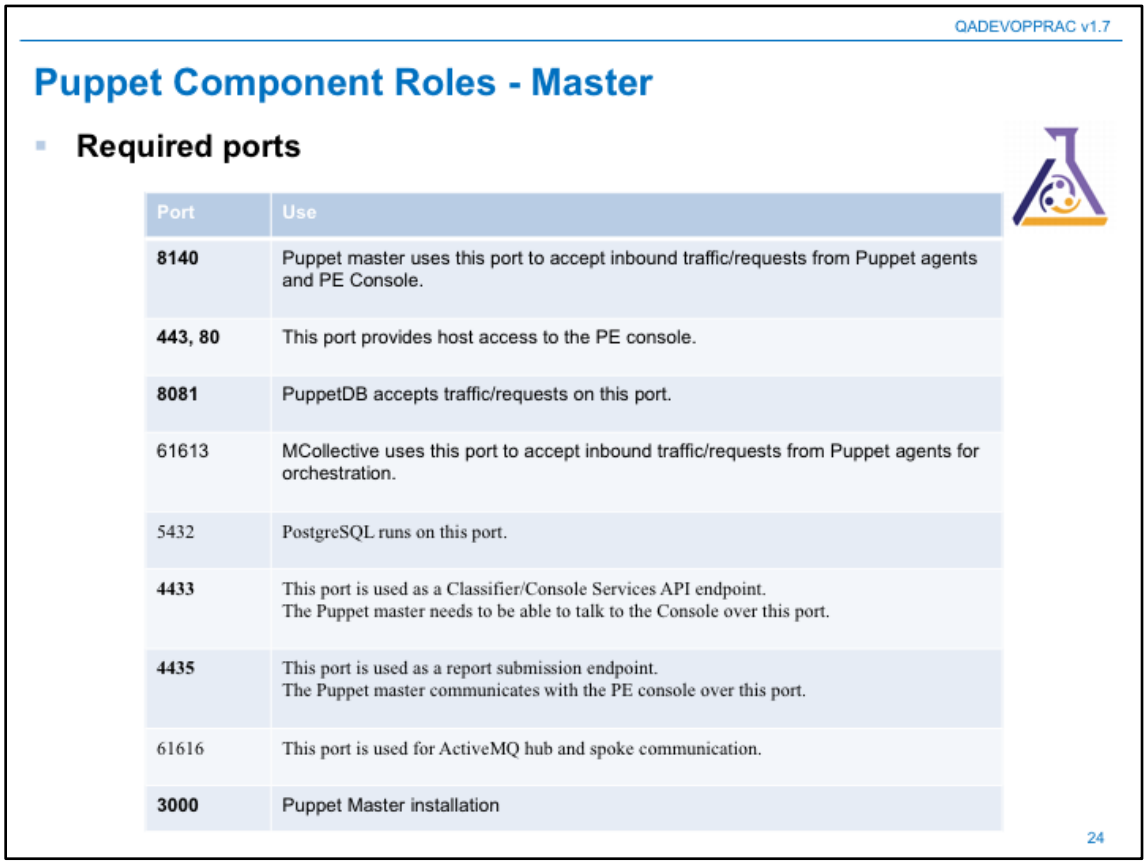
4. Report on differences between actual and desired states, and any changes made enforcing the desired state.




(*)Puppet Master can now be installed on Solaris 11.2 onwards.

## Puppet Component Roles - Master

- **Puppet Enterprise Console**
- **Graphical interface to the Puppet infrastructure**
  - presents an overview of your systems
  - provides detailed information about each node
  - collates and displays statistics
  - provides an interface for node classification
  - enables report browsing and viewing

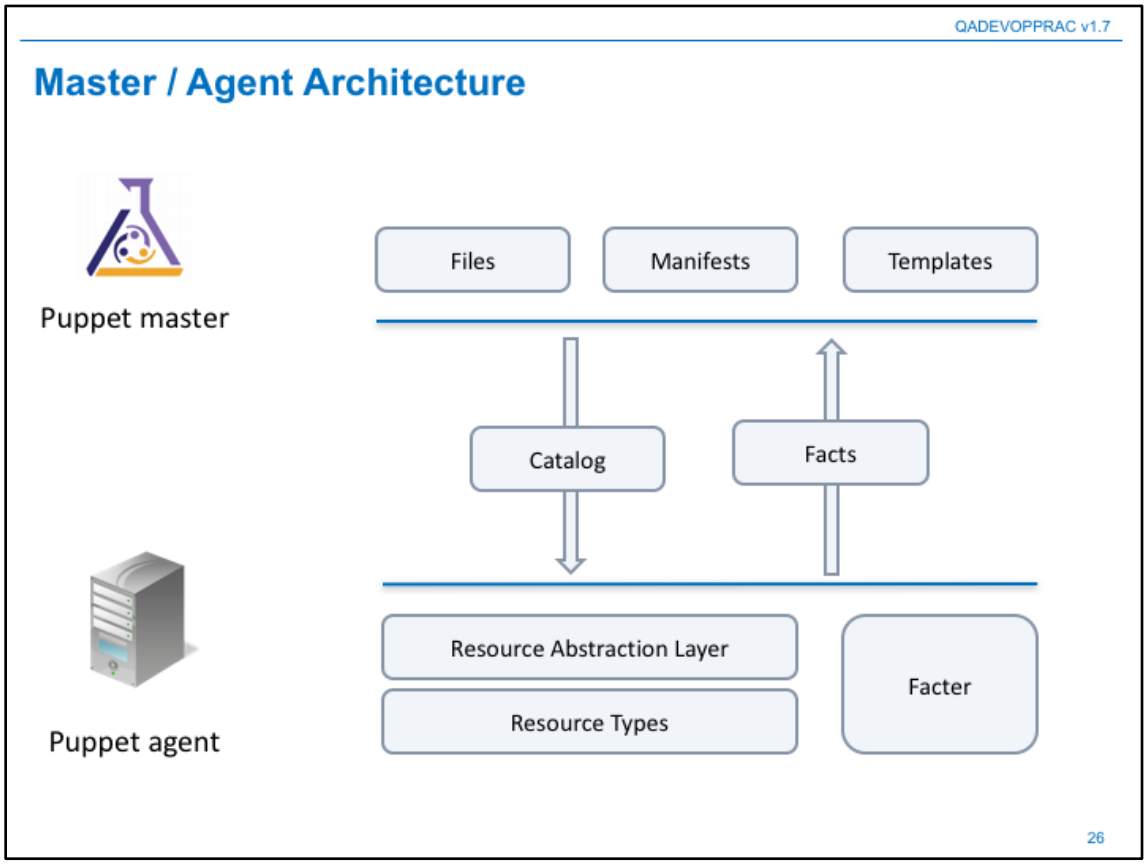


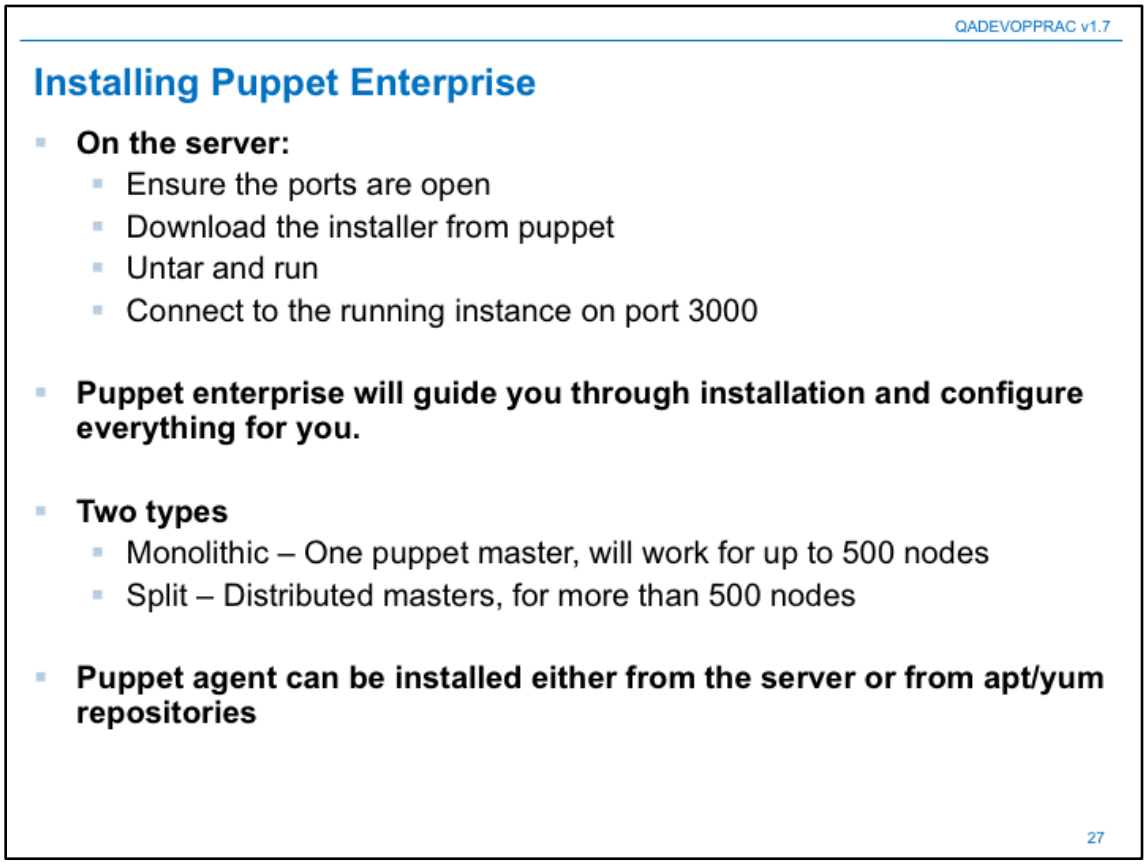

Some of these ports are specific to the Puppet master.

The Puppet Agent node would need port 8140 to be open in order to communicate with the Puppet Master.

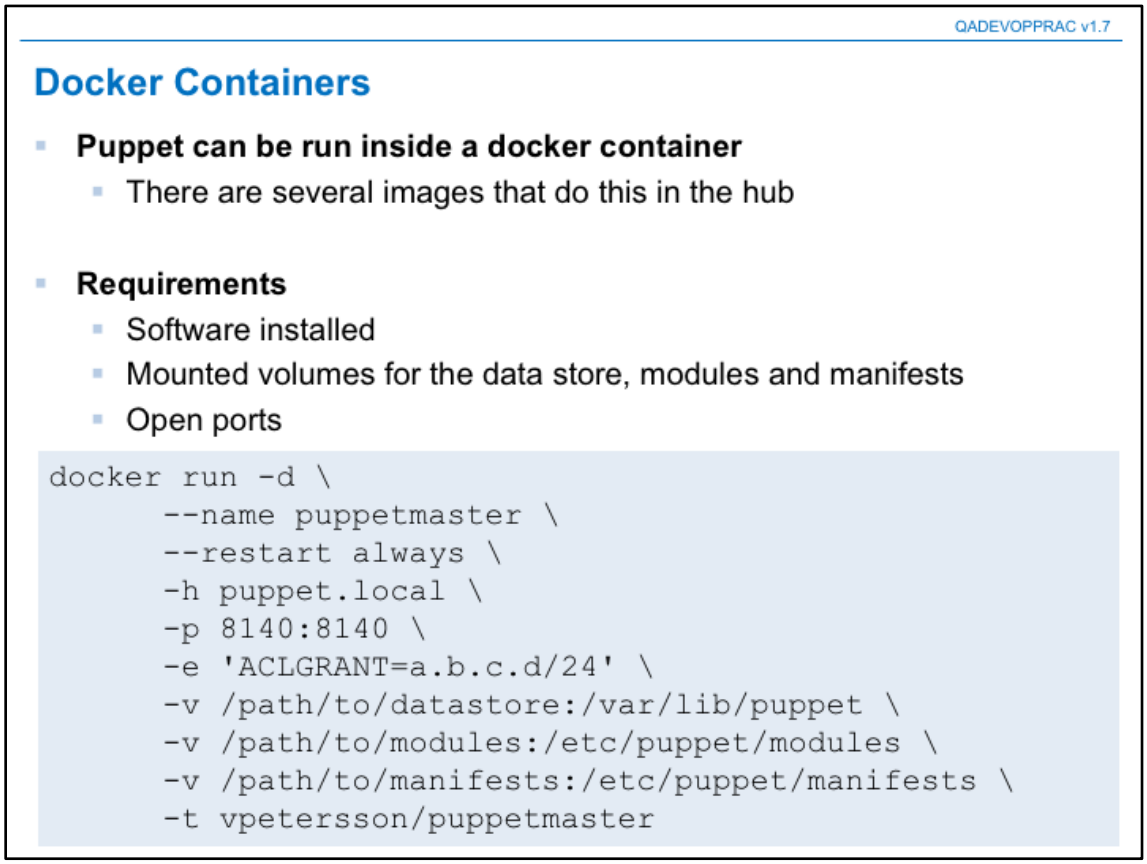
## Puppet Component Roles - Agent

- puppet agent service **runs on all managed nodes**
- puppet agent **service**
  - initiates secure and authenticated connection to the puppet master
  - sends information about its current state
  - enforces a retrieved configuration state (catalog)
  - retrieves any required files


QADEVOPPRAC v1.7
Master / Agent Architecture
Puppet master
Puppet agent
Files
Manifests
Templates
Catalog
Facts
Resource Abstraction Layer
Resource Types
Facter
26

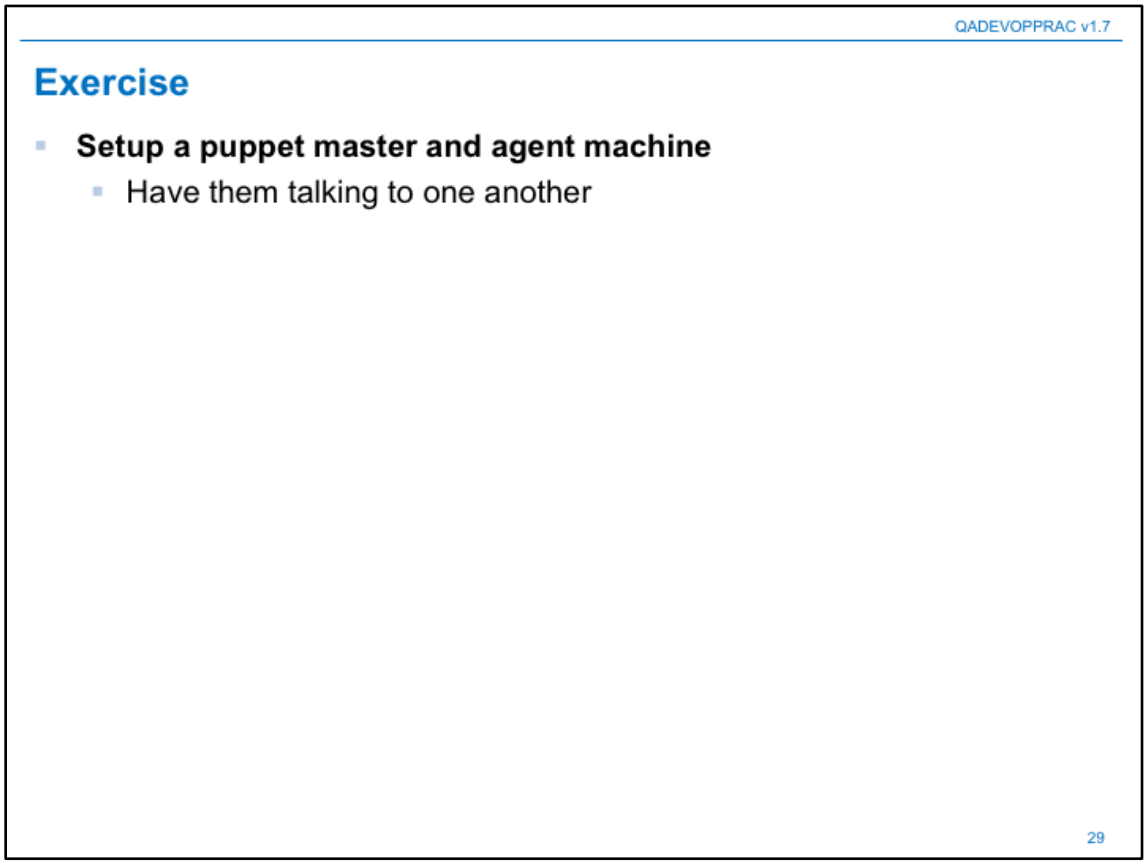



See https://docs.puppetlabs.com/pe/latest/install_basic.html for the most up to date version




See http://blog.viktorpetersson.com/post/100997217139/running-puppet-master-in-docker for the full explanation

All the docker flags are at: https://docs.docker.com/reference/run/


QADEVOPPRAC v1.7
Exercise
Setup a puppet master and agent machine
Have them talking to one another
29

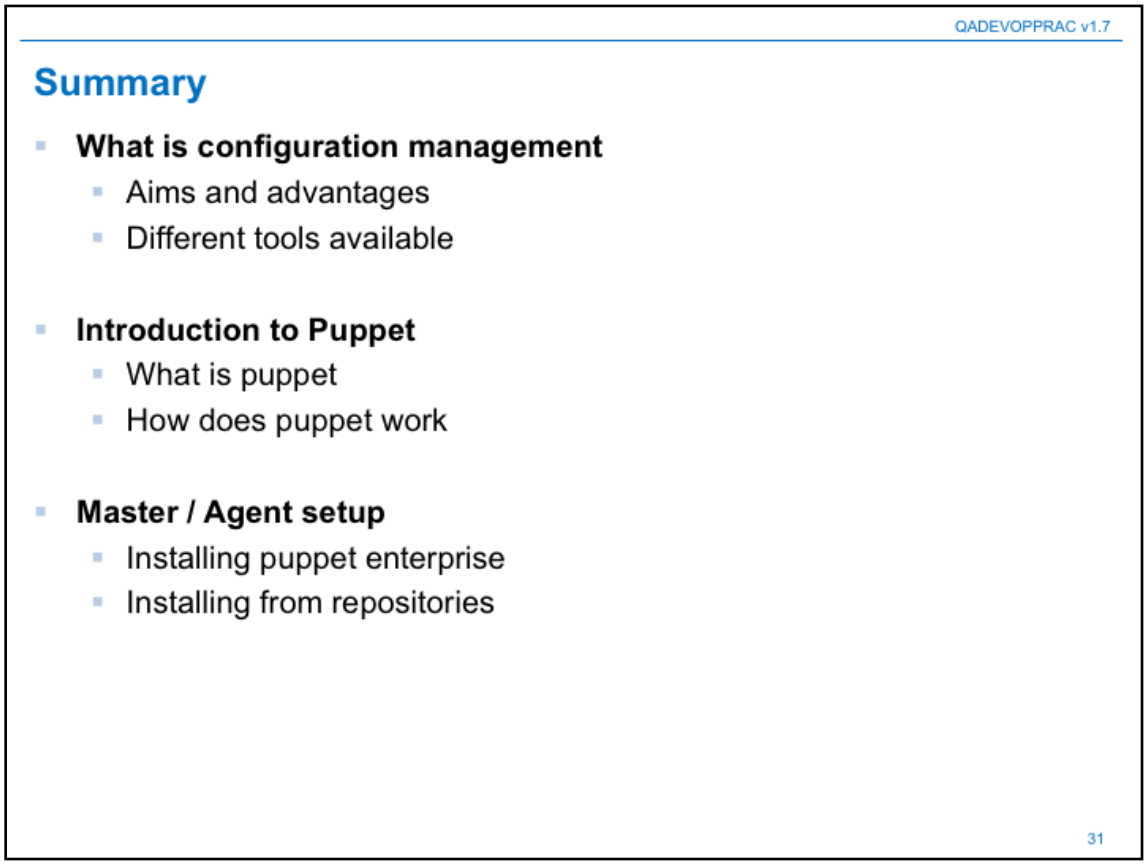
## To read more about Puppet

**Books:**

- Puppet Best Practices (2016. link: https://www.safaribooksonline.com/library/view/puppet-best-practices/9781491922996/)
- Documentation (2017. link: https://puppet.com/docs)
- Learning Puppet 4 (2016. link: http://shop.oreilly.com/product/0636920034131.do)

**Tutorials:**

- https://www.tutorialspoint.com/puppet/
- https://learn.puppet.com/
- https://www.edureka.co/blog/puppet-tutorial/
- https://www.example42.com/tutorials/PuppetTutorial/#slide-0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Summary
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Introduction to Puppet
What is puppet
How does puppet work
Master / Agent setup
Installing puppet enterprise
Installing from repositories
31