СРЕДСТВА АВТОМАТИЗАЦИИ

Author:

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CI/CD Tools

Jenkins

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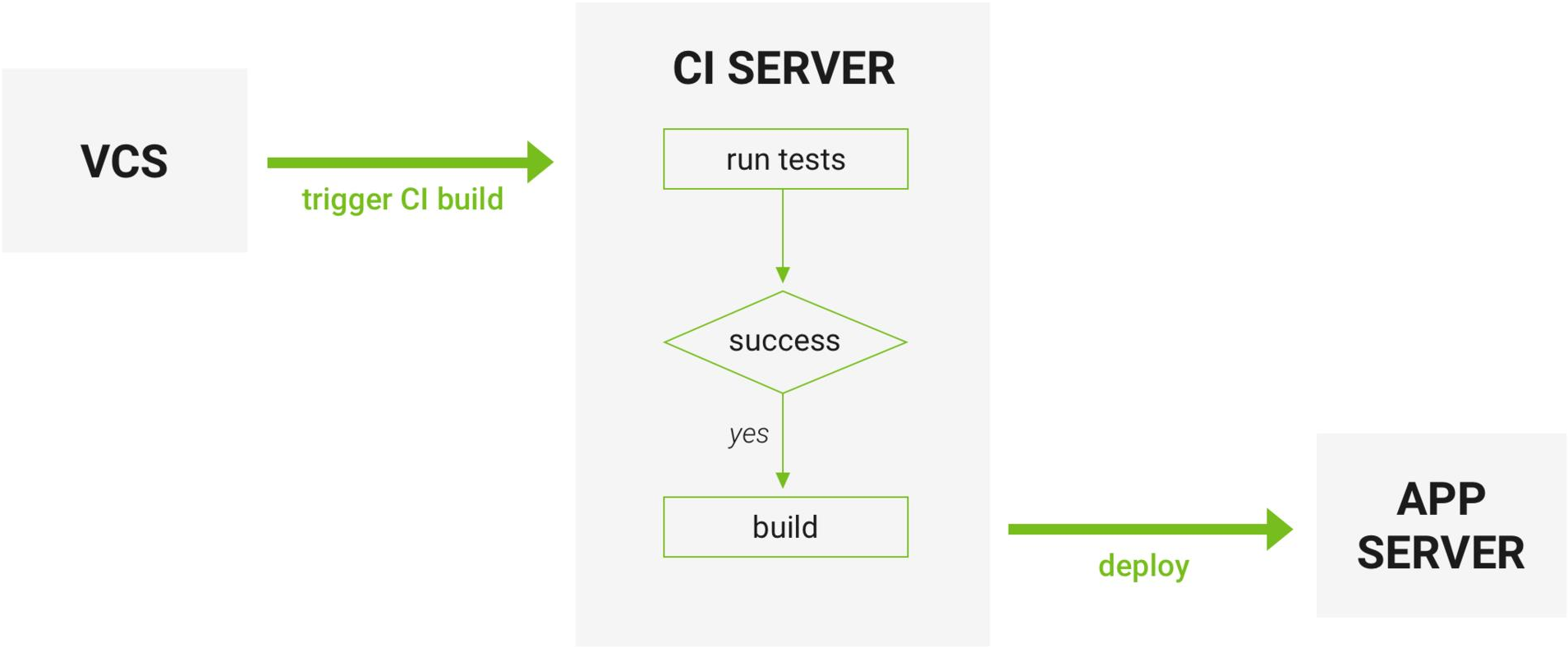
Как это работает



Jenkins

Jenkins

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Jenkins

Jenkins search Jenkins Admin | log out

Jenkins ENABLE AUTO REFRESH

- New Item
- People
- Build History
- Manage Jenkins
- Credentials
- My Views

add description

All +

S	W	Name ↓	Last Success	Last Failure	Last Duration	
		OpenShift Sample	N/A	N/A	N/A	
		Test OpenShift Job	14 hr - #1	N/A	12 sec	

Icon: S M L

Legend RSS for all RSS for failures RSS for just latest builds

Build Queue

No builds in the queue.

Build Executor Status

jenkins-slave-5-hz9if-0253fc22
1 Idle

jenkins-slave-5-p2oih-6d33f3d0
1 Idle

Scripted Pipeline

Jenkins

Pipeline

Definition: Pipeline script

Script

```
node('master'){
    stage ('Echo 1') {
        echo "Running stage 1"
        sleep 10
    }

    stage ('Echo 2') {
        echo "Running stage 2"
        sleep 10
    }
}
```

Use Groovy Sandbox

Pipeline Syntax

Declarative Pipeline

Pipeline script

Script

try sample Pipeline...

```
pipeline {
    agent {
        node {
            label "master"
        }
    }
    stages {
        stage ('Echo 1') {
            steps {
                echo "Running stage 1"
            }
        }
        stage ('Echo 2') {
            steps {
                echo "Running stage 2"
            }
        }
```


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Jenkins

Достоинства Jenkins:

- цена (он бесплатен);
- возможности по настройке;
- система плагинов;
- полный контроль над системой.

Недостатки Jenkins:

- требуется выделенный сервер;
- на настройку необходимо время.

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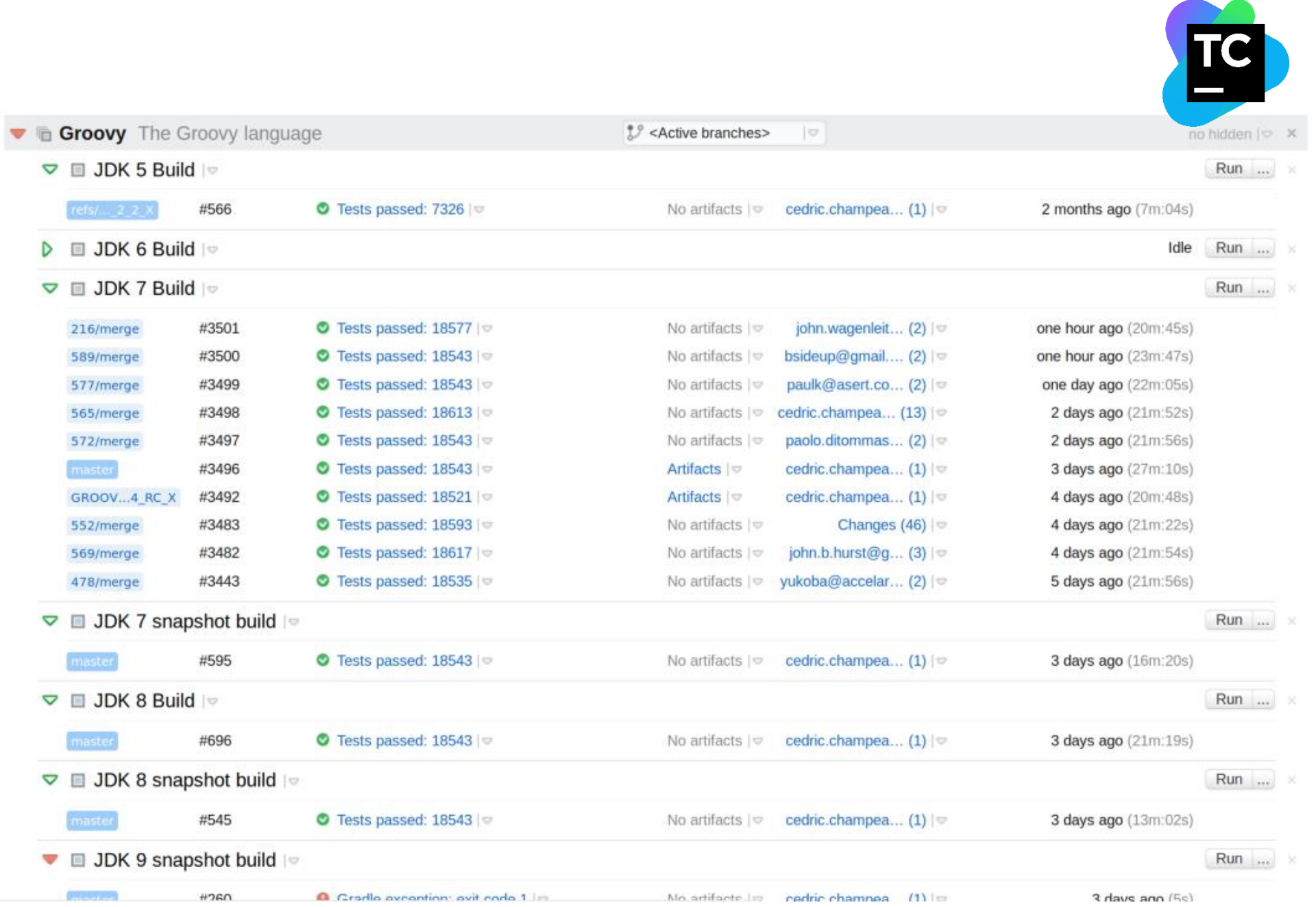
TeamCity



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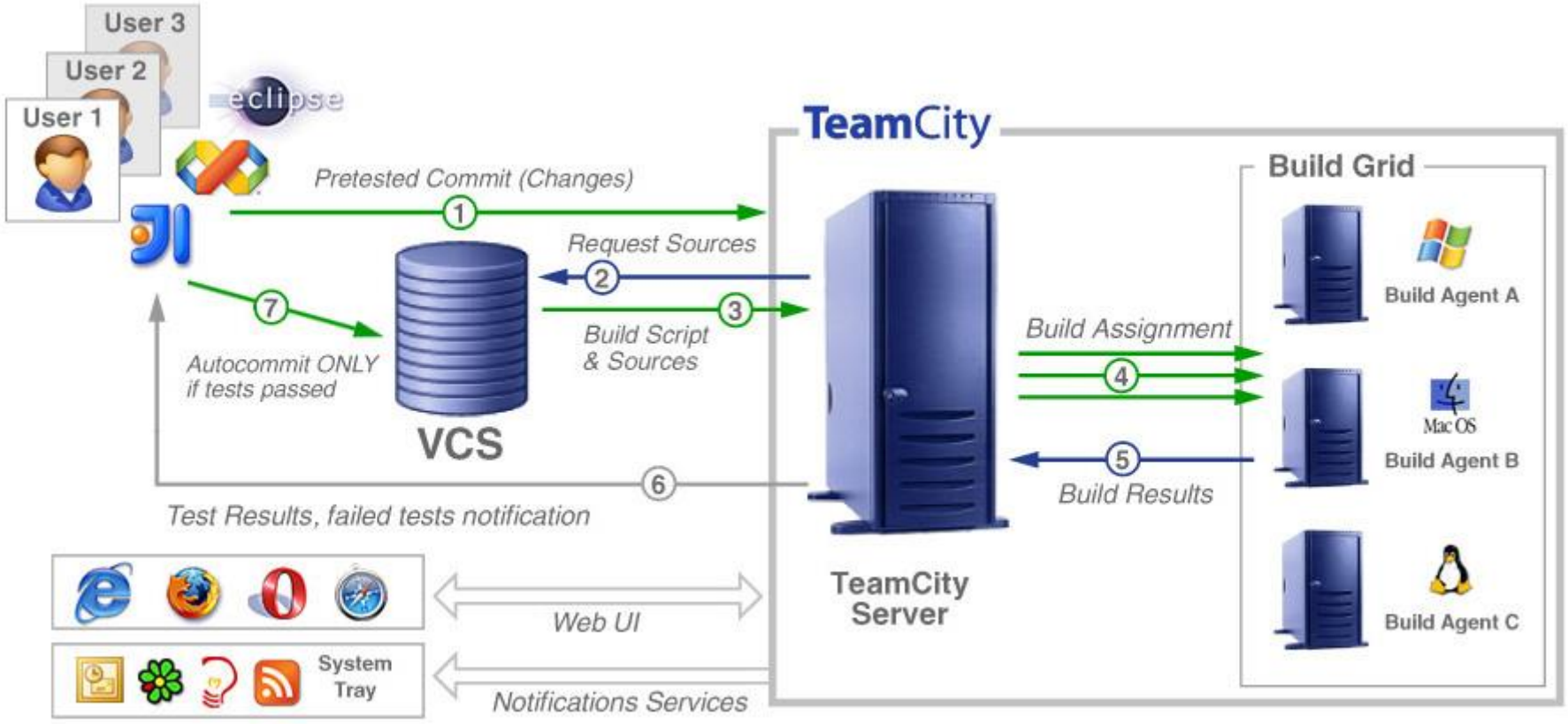

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GitLab CI

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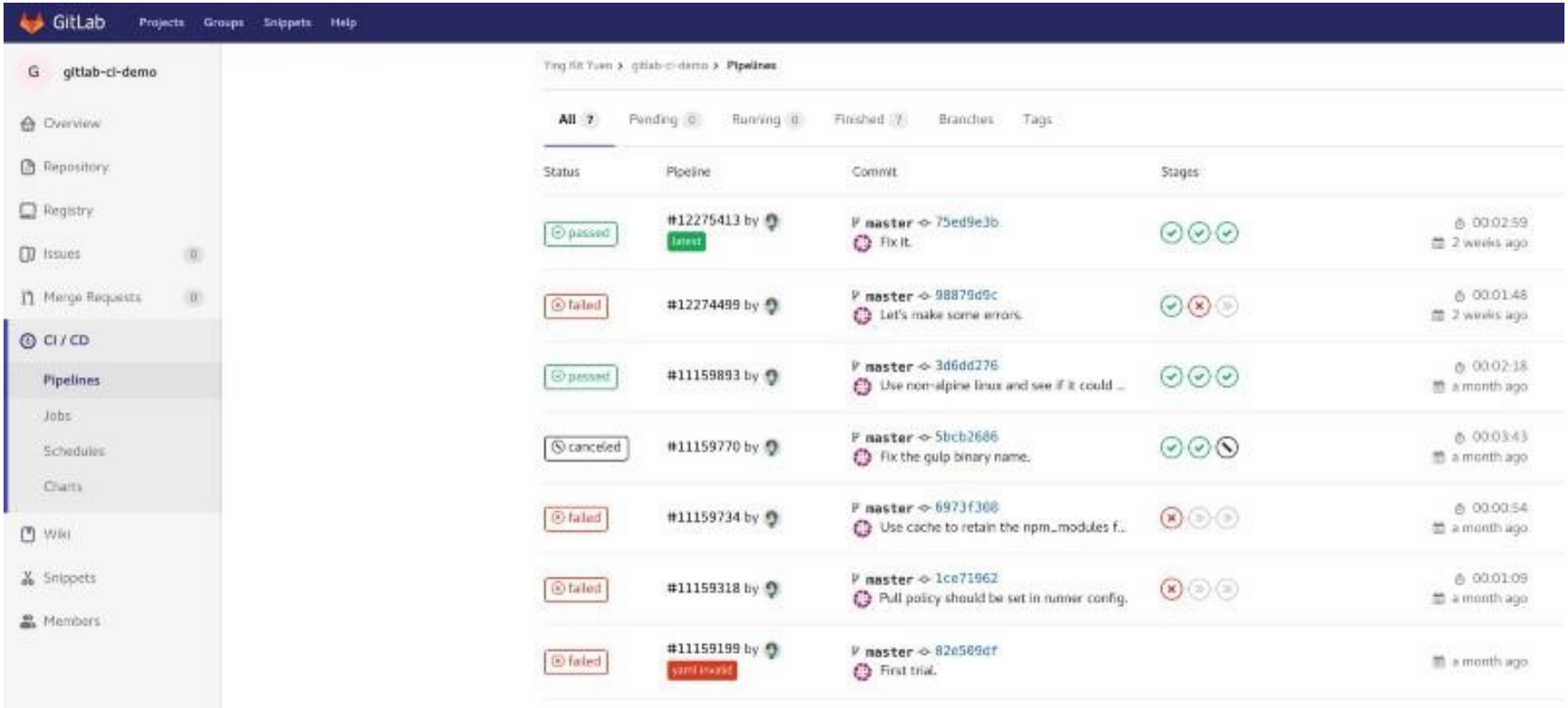
```
stages:
  - lint-css
  - lint-js
  - unit-test

image: node:6.11.2


lint css:
  stage: lint-css
  before_script:
    - npm install
  cache:
    untracked: true
  only:
    - master
  script:
    - ./node_modules/gulp/bin/gulp.js lint-css

lint js:
  stage: lint-js
  cache:
    untracked: true
    policy: pull
  only:
    - master
  script:
    - ./node_modules/gulp/bin/gulp.js lint-js

run unit test:
  stage: unit-test
  cache:
    untracked: true
    policy: pull
  only:
    - master
  script:
    - ./node_modules/gulp/bin/gulp.js test
```



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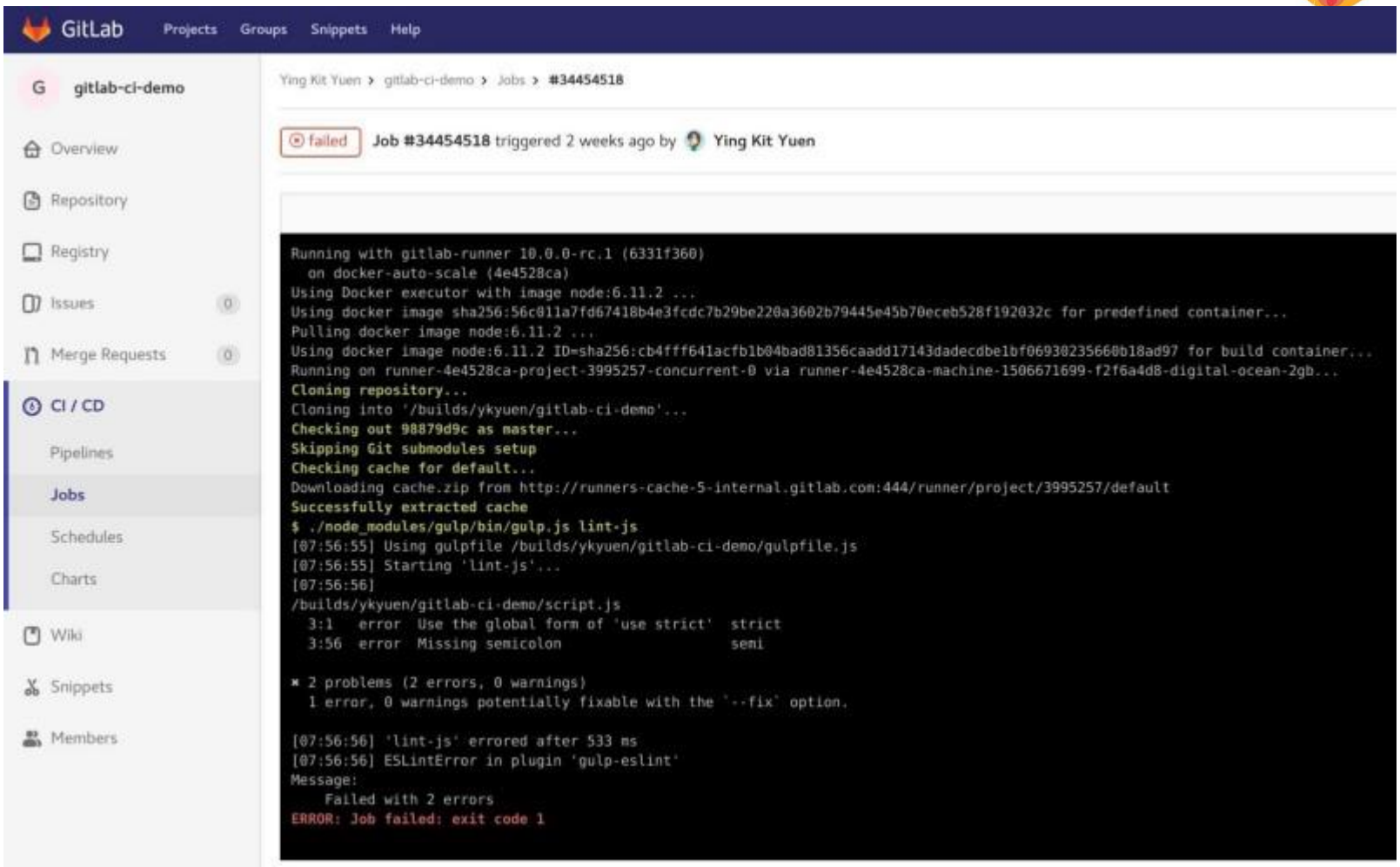

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CONFIGURATION MANAGEMENT

ANSIBLE

CHEF

puppet

Puppet

- Клиент-серверная архитектура
- Конфигурация основана на «Фактах»
- Написан на Ruby
- Ruby-подобный синтаксис

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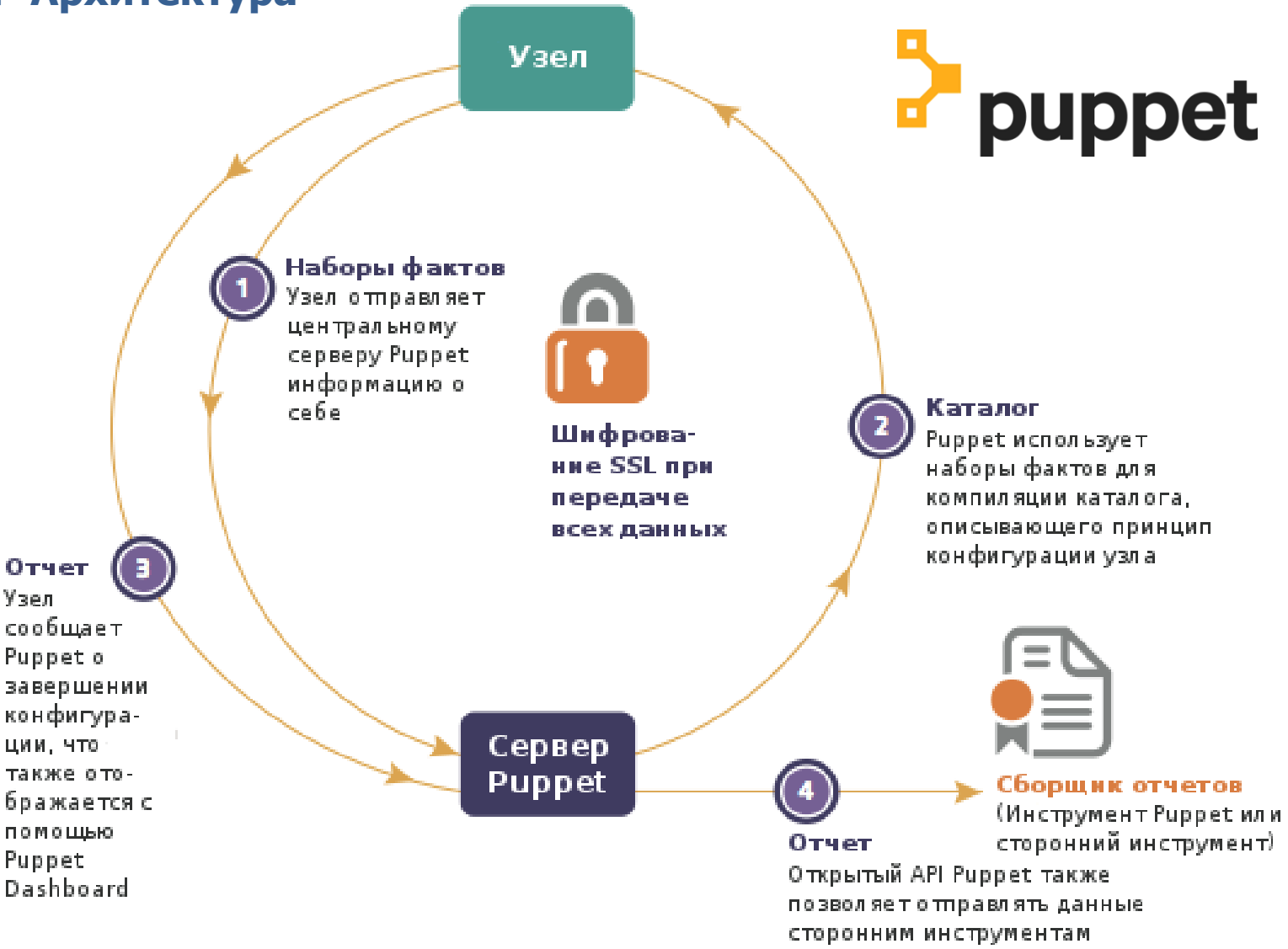
Puppet -Архитектура



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Chef

- Клиент-серверная архитектура
- Написан на Ruby
- Ruby-подобный синтаксис

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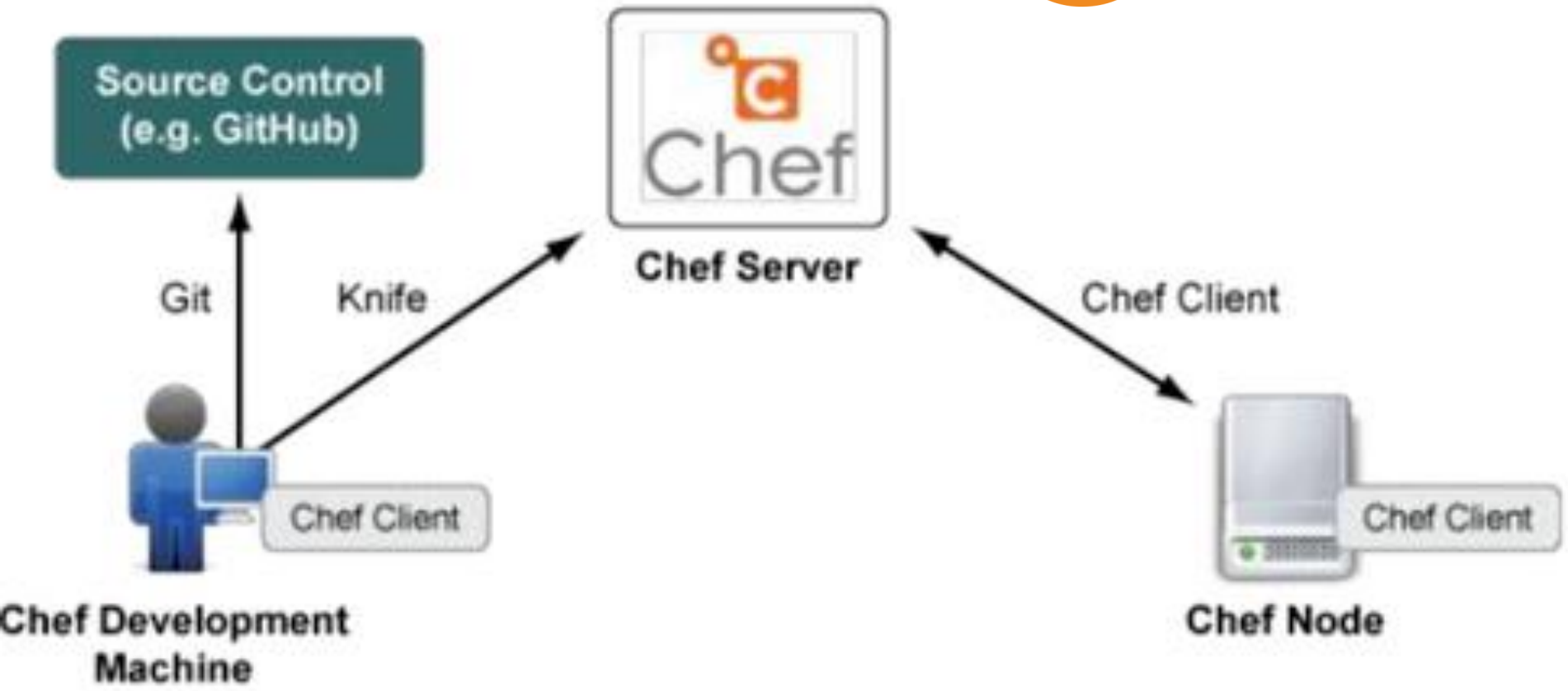
Chef-Архитектура



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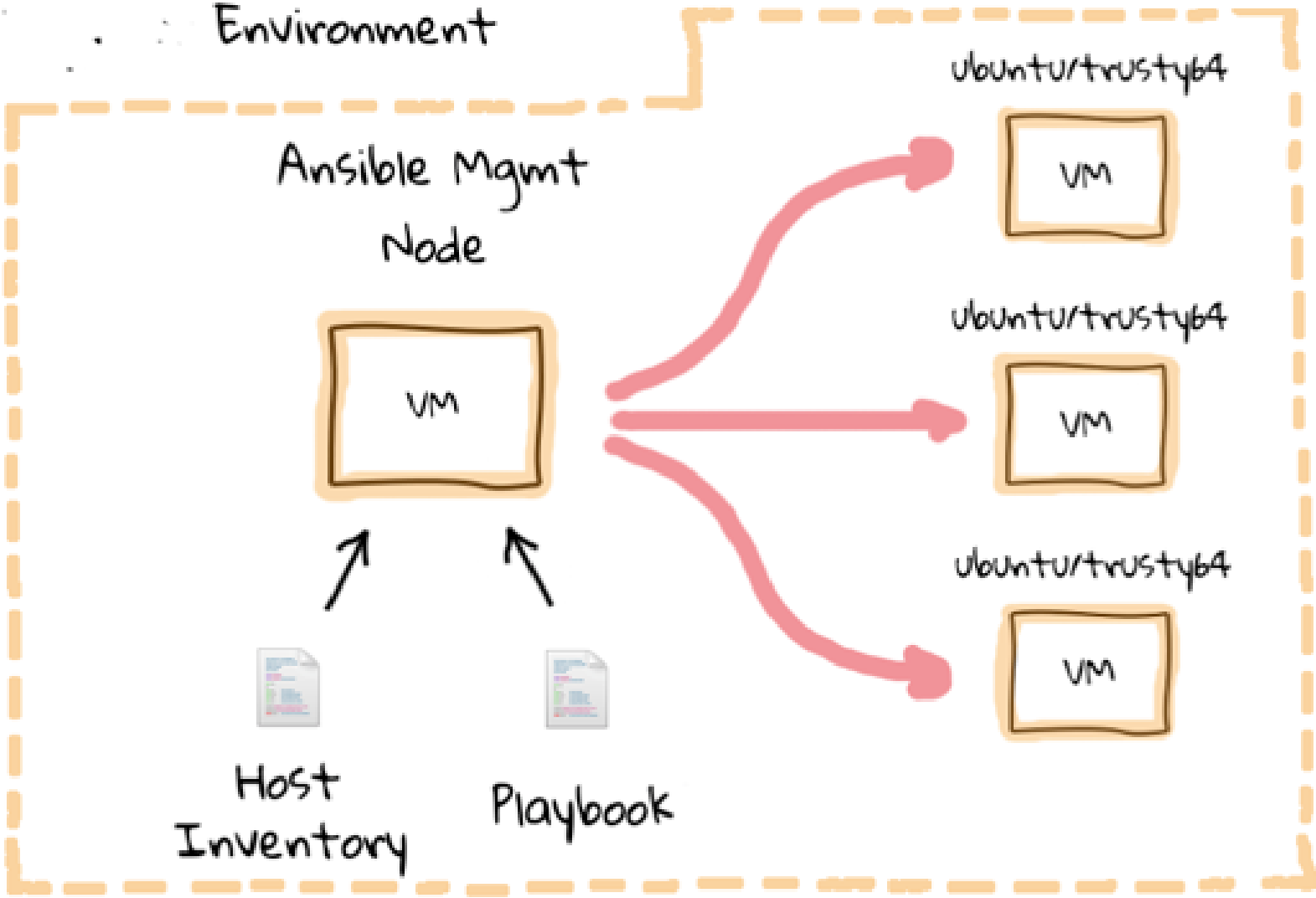
Ansible

- Без-агентная архитектура
- Написан на Python
- Yaml-подобный синтаксис

Ansible - Архитектура



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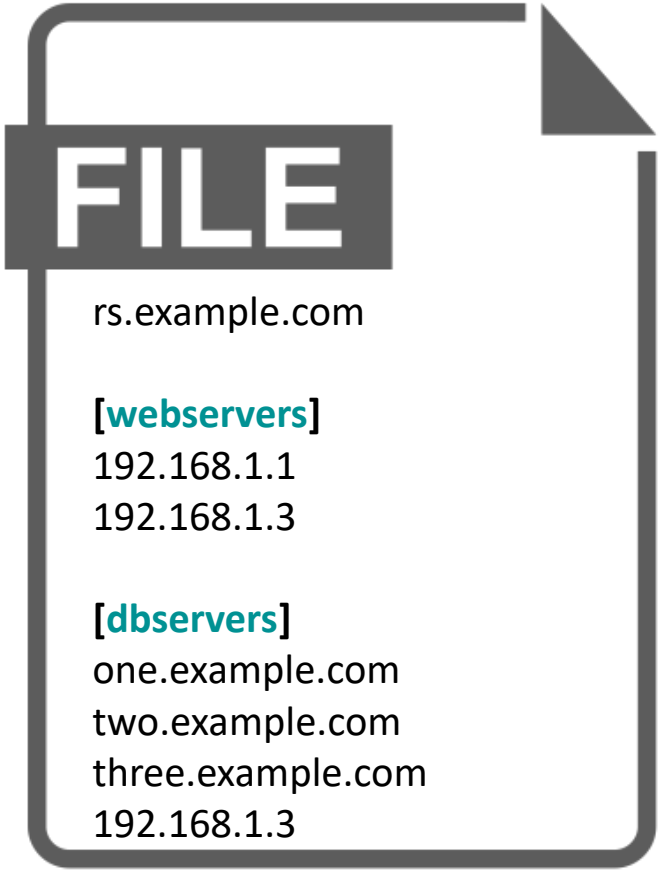
Inventory



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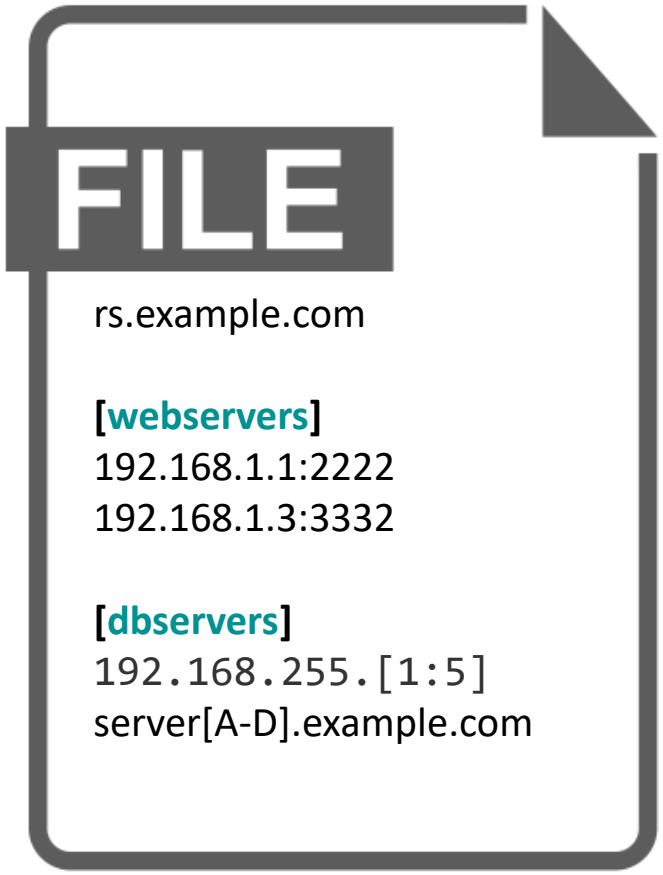
Inventory

```
inventories/
├── branch-A
│   ├── dbservers
│   └── webservers
├── branch-B
│   ├── dbservers
│   └── webservers
└── headquarter
    ├── dbservers
    └── webservers
```



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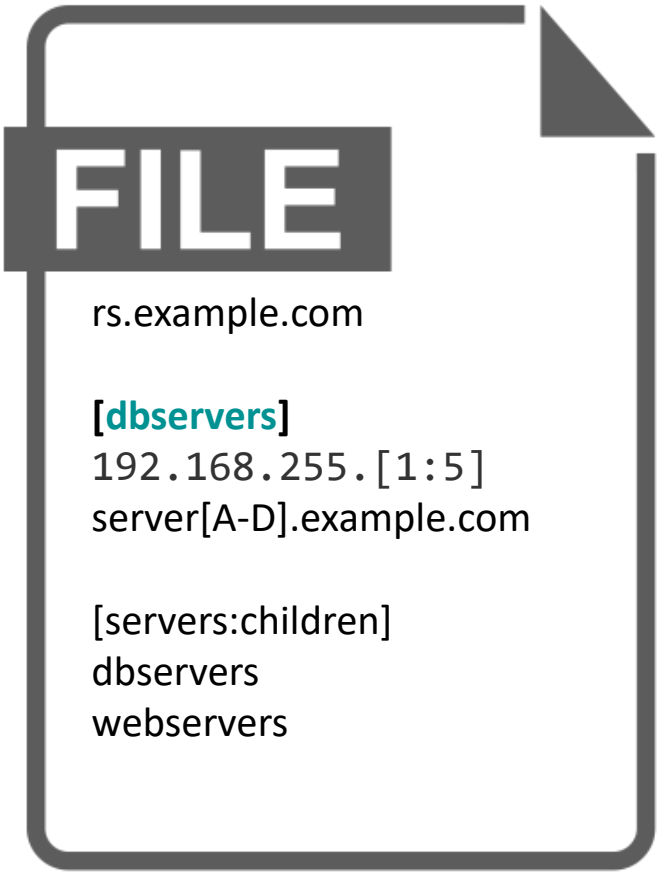
Inventory



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Ad Hoc команды

```
[root@k8smaster ansible]# ansible 172.0.0.10 -i ./myhosts -a 'ip route' -u root --ask-pass
SSH password:
172.0.0.10 | CHANGED | rc=0 >>
default via 10.0.2.2 dev eth0 proto dhcp metric 100
10.0.2.0/24 dev eth0 proto kernel scope link src 10.0.2.15 metric 100
172.0.0.0/24 dev eth1 proto kernel scope link src 172.0.0.10 metric 101
172.17.0.0/16 dev docker0 proto kernel scope link src 172.17.0.1

[root@k8smaster ansible]#
```


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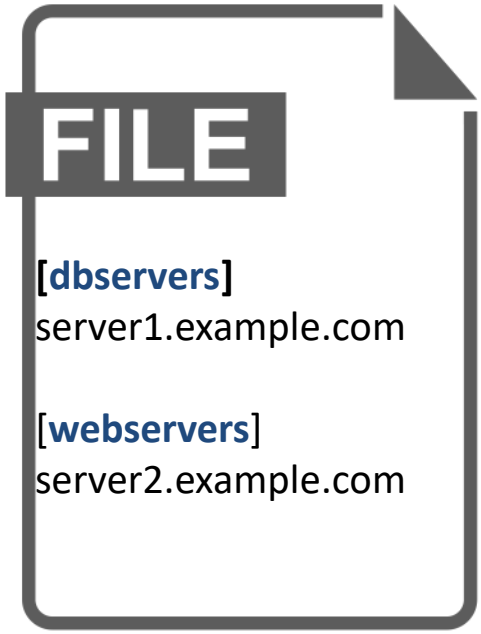
Конфигурационные файлы

- **ANSIBLE_CONFIG** - переменная окружения
- **ansible.cfg** - в текущем каталоге
- **.ansible.cfg** - в домашнем каталоге пользователя)
- **/etc/ansible/ansible.cfg**




```
[root@k8smaster ansible]# cat ansible.cfg
[defaults]

inventory = ./myhosts
remote_user = user
ask_pass = True
[root@k8smaster ansible]#
```

ansible dbservers -a 'hostname'

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Gathering

```
[root@k8smaster ansible]# ansible dbservers -m setup
SSH password:
172.0.0.10 | SUCCESS => {
    "ansible_facts": {
        "ansible_all_ipv4_addresses": [
            "172.0.0.10",
            "10.0.2.15",
            "172.17.0.1"
        ],
        "ansible_all_ipv6_addresses": [
            "fe80::a00:27ff:fe25:dc43",
            "fe80::5054:ff:fe26:1060"
        ],
        "ansible_apparmor": {
            "status": "disabled"
        },
        "ansible_architecture": "x86_64",
        "ansible_bios_date": "12/01/2006",
        "ansible_bios_version": "VirtualBox",
        "ansible_cmdline": {
            "BOOT_IMAGE": "/boot/vmlinuz-3.10.0-957.5.1.el7.x86_64",
            "LANG": "en_US.UTF-8",
            "biosdevname": "0",
            "console": "ttyS0,115200n8",
            "crashkernel": "auto",
            "elevator": "noop",
            "net.ifnames": "0",
            "no_timer_check": true,
            "ro": true,
            "root": "UUID=f52f361a-da1a-4ea0-8c7f-ca2706e86b46"
        },
        "ansible_date_time": {
            "date": "2019-09-29",
            "day": "29",
            "epoch": "1569791355",
            "hour": "21",
            "iso8601": "2019-09-29T21:09:15Z",
```


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Модули

```
[root@k8smaster ansible]# ansible dbservers -m raw -a 'hostname'
SSH password:
172.0.0.10 | CHANGED | rc=0 >>
k8smaster.my.home
Shared connection to 172.0.0.10 closed.
```


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Основы playbooks

- play
- task

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Hello world

```
- name: Hello World
  hosts: all

  tasks:
  - debug: var=ansible_user_id
  - shell: echo Hello World!
~
~
~
~
~
```

```
[root@k8smaster ansible]# ansible-playbook hello_world.yml -i localhost, -c local -v
Using /etc/ansible/ansible.cfg as config file

PLAY [Hello World] *************************************************************************

TASK [Gathering Facts] *********************************************************************
ok: [localhost]

TASK [debug] *******************************************************************************
ok: [localhost] => {
    "ansible_user_id": "root"
}

TASK [shell] *******************************************************************************
changed: [localhost] => {"changed": true, "cmd": "echo Hello World!", "delta": "0:00:00.003136",
 "end": "2019-09-29 19:27:34.847406", "rc": 0, "start": "2019-09-29 19:27:34.844270", "stderr":
"", "stderr_lines": [], "stdout": "Hello World!", "stdout_lines": ["Hello World!"]}

PLAY RECAP *********************************************************************************
localhost                  : ok=3    changed=1    unreachable=0    failed=0    skipped=0    resc
ued=0    ignored=0

[root@k8smaster ansible]#
```


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Example

```
[root@k8smaster ansible]# cat example2.yml
---

- name: Run show commands on servers
  hosts: dbservers
  gather_facts: false

  tasks:

    - name: run docker ps
      raw: docker ps


- name: Run show commands on servers
  hosts: dbservers
  gather_facts: false

  tasks:

    - name: run ip route
      raw: ip route

    - name: run ip addr
      raw: ip addr
[root@k8smaster ansible]#
```


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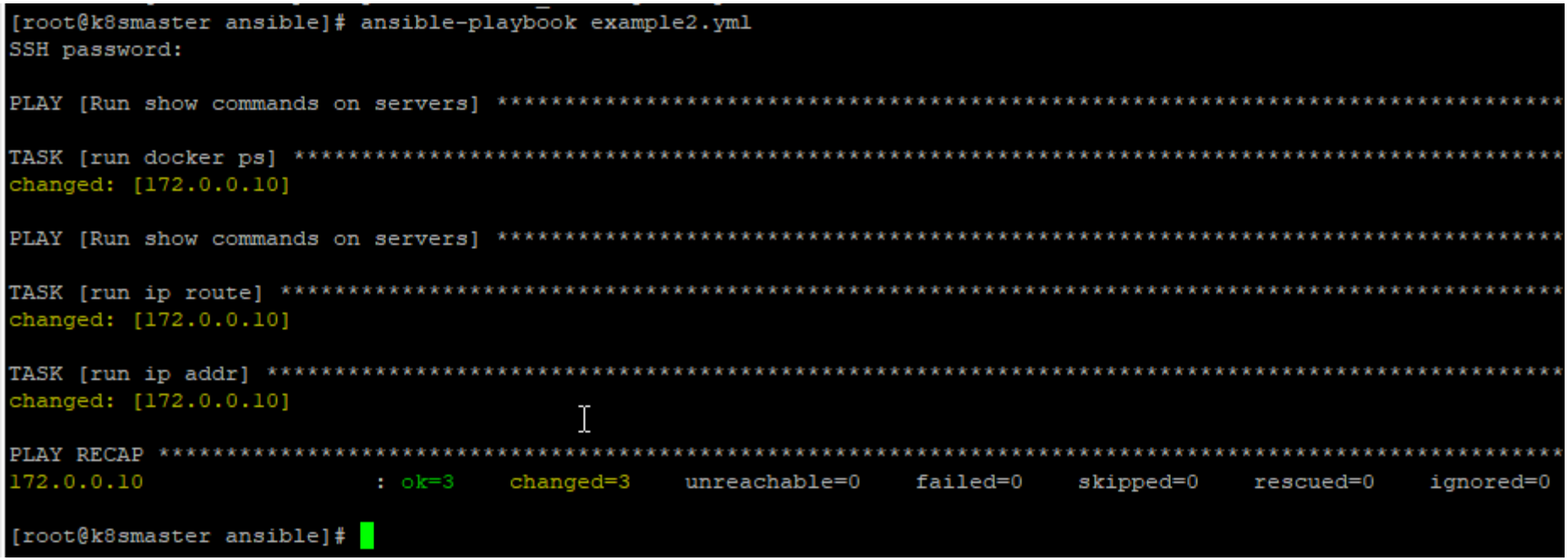
Результат выывода



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Результат выывода

```
TASK [run ip route] ************************************************************************************************************************************
changed: [172.0.0.10] => {"changed": true, "rc": 0, "stderr": "Shared connection to 172.0.0.10 closed.\r\n", "stderr_lines": ["Shared conne
ction to 172.0.0.10 closed."], "stdout": "default via 10.0.2.2 dev eth0 proto dhcp metric 100 \r\n10.0.2.0/24 dev eth0 proto kernel scope l
ink src 10.0.2.15 metric 100 \r\n172.0.0.0/24 dev eth1 proto kernel scope link src 172.0.0.10 metric 101 \r\n172.17.0.0/16 dev docker0 prot
o kernel scope link src 172.17.0.1 \r\n", "stdout_lines": ["default via 10.0.2.2 dev eth0 proto dhcp metric 100 ", "10.0.2.0/24 dev eth0 pr
oto kernel scope link src 10.0.2.15 metric 100 ", "172.0.0.0/24 dev eth1 proto kernel scope link src 172.0.0.10 metric 101 ", "172.17.0.0/1
6 dev docker0 proto kernel scope link src 172.17.0.1 "]}

TASK [run ip addr] *************************************************************************************************************************************
changed: [172.0.0.10] => {"changed": true, "rc": 0, "stderr": "Shared connection to 172.0.0.10 closed.\r\n", "stderr_lines": ["Shared conne
ction to 172.0.0.10 closed."], "stdout": "1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000\r\n
  link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00\r\n    inet 127.0.0.1/8 scope host lo\r\n       valid_lft forever preferred_lft for
ever\r\n    inet6 ::1/128 scope host \r\n       valid_lft forever preferred_lft forever\r\n2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1
500 qdisc pfifo_fast state UP group default qlen 1000\r\n    link/ether 52:54:00:26:10:60 brd ff:ff:ff:ff:ff:ff\r\n    inet 10.0.2.15/24 br
d 10.0.2.255 scope global noprefixroute dynamic eth0\r\n       valid_lft 82837sec preferred_lft 82837sec\r\n    inet6 fe80::5054:ff:fe26:10
60/64 scope link \r\n       valid_lft forever preferred_lft forever\r\n3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast
 state UP group default qlen 1000\r\n    link/ether 08:00:27:25:dc:43 brd ff:ff:ff:ff:ff:ff\r\n    inet 172.0.0.10/24 brd 172.0.0.255 scope
 global noprefixroute eth1\r\n       valid_lft forever preferred_lft forever\r\n    inet6 fe80::a00:27ff:fe25:dc43/64 scope link \r\n
 valid_lft forever preferred_lft forever\r\n4: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default
 \r\n    link/ether 02:42:4f:03:21:12 brd ff:ff:ff:ff:ff:ff\r\n    inet 172.17.0.1/16 brd 172.17.255.255 scope global docker0\r\n       val
id_lft forever preferred_lft forever\r\n", "stdout_lines": ["1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group defa
ult qlen 1000", "    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00", "    inet 127.0.0.1/8 scope host lo", "       valid_lft foreve
r preferred_lft forever", "    inet6 ::1/128 scope host ", "       valid_lft forever preferred_lft forever", "2: eth0: <BROADCAST,MULTICAST
,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000", "    link/ether 52:54:00:26:10:60 brd ff:ff:ff:ff:ff:ff", "    i
net 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic eth0", "       valid_lft 82837sec preferred_lft 82837sec", "    inet6 fe
80::5054:ff:fe26:1060/64 scope link ", "       valid_lft forever preferred_lft forever", "3: eth1: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 15
00 qdisc pfifo_fast state UP group default qlen 1000", "    link/ether 08:00:27:25:dc:43 brd ff:ff:ff:ff:ff:ff", "    inet 172.0.0.10/24 br
d 172.0.0.255 scope global noprefixroute eth1", "       valid_lft forever preferred_lft forever", "    inet6 fe80::a00:27ff:fe25:dc43/64 sc
ope link ", "       valid_lft forever preferred_lft forever", "4: docker0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state
 DOWN group default ", "    link/ether 02:42:4f:03:21:12 brd ff:ff:ff:ff:ff:ff", "    inet 172.17.0.1/16 brd 172.17.255.255 scope global do
cker0", "       valid_lft forever preferred_lft forever"]}

PLAY RECAP *********************************************************************************************************************************************
172.0.0.10                 : ok=3    changed=3    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
```


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Порядок выполнения

```
[root@k8smaster ansible]# cat example2.yml
---

- name: Run show commands on servers
  hosts: dbservers
  gather_facts: false

  tasks:

    - name: run docker ps
      raw: docker ps


- name: Run show commands on servers
  hosts: dbservers
  gather_facts: false

  tasks:

    - name: run ip route
      raw: ip route

    - name: run ip addr
      raw: ip addr
[root@k8smaster ansible]#
```


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Ansible

Переменные

 # Простые переменные:

```
bool_var1: True
bool_var2: false
bool_var3: yes
bool_var4: no
str1: string
str2: ‘string’
str3: “string”
```

 # Списки:

```
skills:
  - ansible
  - aws
  - docker
  - terraform
```

 # Списки:

```
skills: [ansible, aws, docker, terraform]
```


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Ansible

Переменные

#Словарь:

```
R1:
  IP: 10.1.1.1/24
  DG: 10.1.1.100
```

 # Обращение к переменным

```
R1['IP']
R1.IP
```


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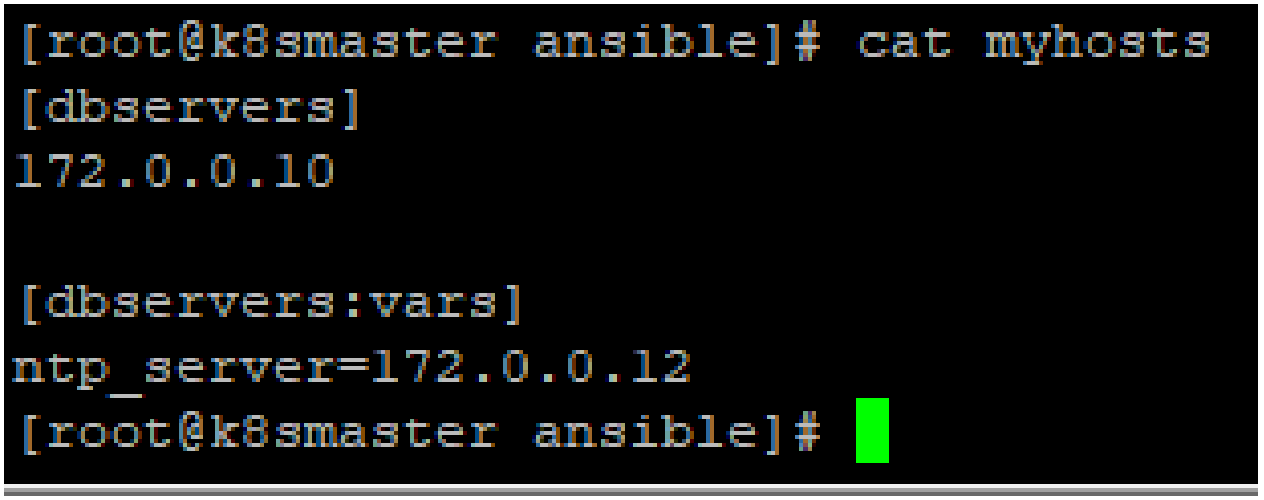
Ansible

Переменные



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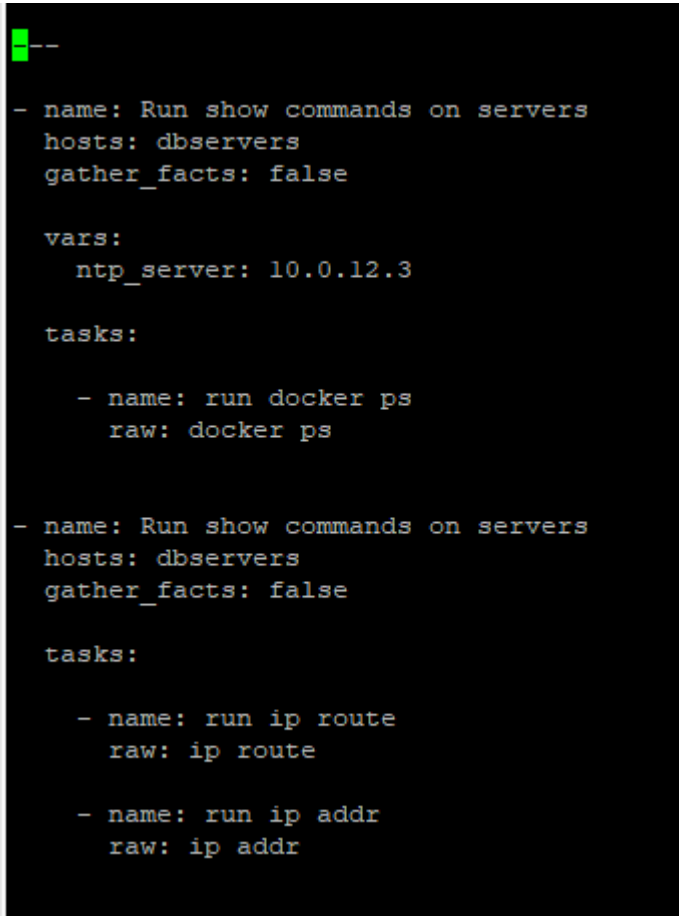
Ansible

Переменные



```
---

- name: Run show commands on servers
  hosts: dbservers
  gather_facts: false

  vars:
    ntp_server: 10.0.12.3

  tasks:

    - name: run docker ps
      raw: docker ps


- name: Run show commands on servers
  hosts: dbservers
  gather_facts: false

  tasks:

    - name: run ip route
      raw: ip route

    - name: run ip addr
      raw: ip addr
```

Ansible

Handlers

```
[root@k8smaster ansible]# cat example3.yml
---
- hosts: testbox
  sudo: yes
  tasks:
    - name: Install Nginx
      yum: pkg=nginx state=latest
      notify:
          - NGINX start

  handlers:
    - name: NGINX start
      service: name=nginx state=started
[root@k8smaster ansible]#
```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Ansible

Include

В playbook можно добавлять:

- задачи
- handlers
- сценарий (play)
- playbook
- файлы с переменными (используют другое ключевое слово)

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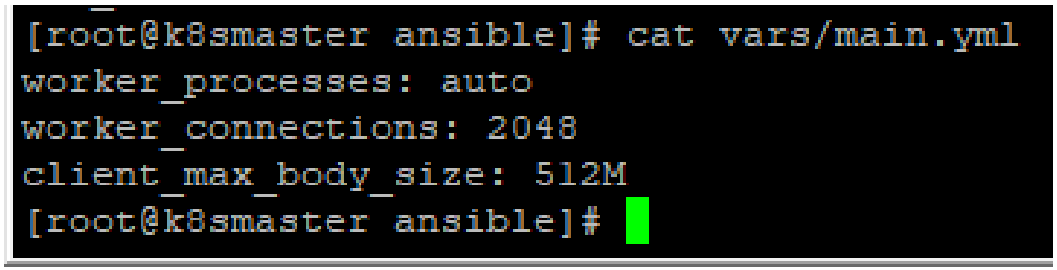
Ansible

Templates



Ansible

Templates

```
[root@k8smaster ansible]# cat templates/nginx.conf
user  {{ nginx_user }};
worker_processes  {{ worker_processes }};
worker_priority     -1;

error_log  /var/log/nginx/error.log warn;
pid        /var/run/nginx.pid;

events {
    worker_connections  {{ worker_connections }};
}

http {
    include       /etc/nginx/mime.types;
    default_type  application/octet-stream;

    log_format  main  '$remote_addr - $remote_user [$time_local] "$request" '
                      '$status $body_bytes_sent "$http_referer" '
                      '"$http_user_agent" "$http_x_forwarded_for"';
    access_log  /var/log/nginx/access.log  main;

    sendfile on;
    tcp_nopush on;
    tcp_nodelay on;
    keepalive_timeout  65;
    reset_timedout_connection  on;
    client_body_timeout        35;
    send_timeout               30;

    gzip on;
    gzip_min_length     1000;
    gzip_vary on;
    gzip_proxied        expired no-cache no-store private auth;
    gzip_types          text/plain text/css application/json application/x-javascript text/xml application/xml application/xml+rss text/javascript application/javascript;
    gzip_disable        "msie6";

    types_hash_max_size 2048;
    client_max_body_size {{ client_max_body_size }};
    proxy_buffer_size   64k;
    proxy_buffers   4 64k;
    proxy_busy_buffers_size   64k;
    server_names_hash_bucket_size 64;

    include /etc/nginx/modules-enabled/*.conf;
    include /etc/nginx/conf.d/*.conf;
    include /etc/nginx/sites-enabled/*;
}
[root@k8smaster ansible]#
```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Ansible

Templates

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Thanks for Your Attention

Questions?

Introduction to Devops

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