

Kapitel 1

Knoten aufspüren und Clustering

Beim Clusterbau müssen Klassen von Knoten (Webserver) Informationen über andere Klassen (Datenbanken) finden können. Oder der Loadbalancer Informationen über die Webserver.

- Informationen über andere Knoten bekommen.
- Erstellung von dynamischen Konfigurationen.
- Warum und wie schaltet man das "fact caching" ein.

1.1 Knoten über magische Variablen

Wir kennen bereits die benutzerdefinierten und systemgenerierten (facts) Variablen. Es gibt auch noch Variablen im Inventory, Plays welche Gruppen gibt es bzw. sind im Play beteiligt. Diese Variablen nennt man auch "magic Variables".

Magic Variables	Beschreibung
hostvars	Sind "facts" eines anderen Hosts.
groups	Eine Liste der Gruppen im Inventory.
group_names	Eine Liste der Gruppen zu einem Host.
inventory_hostname	Der Hostname im Inventory.
play_hosts	Liste alle Hosts die im Play beteiligt sind.

Weitere "magic_variables" sind `delegate_to`, `inventory_dir` und `inventory_file`.

1.2 Die Loadbalancer-Rolle

Der Haproxy verteilt die Anfragen auf die drei Webserver.

ToDo: Bild erstellen.

```
ansible-galaxy init --init-path projects/roles/ haproxy
```

```
---
# filename: roles/haproxy/defaults/main.yml
haproxy:
  config:
    cnfpath: /etc/haproxy/haproxy.cfg
    enabled: 1
    listen_address: 0.0.0.0
    listen_port: 8080
  service: haproxy
  pkg: haproxy
```

```
---
# filename: roles/haproxy/tasks/main.yml
- include: install.yml
- include: configure.yml
- include: service.yml
```

```
---
# filename: roles/haproxy/tasks/install.yml
- name: install haproxy
  apt:
    name: "{{ haproxy['pkg'] }}"
```

```
---
# filename: roles/haproxy/tasks/configure.yml
- name: create haproxy config
  template: src="haproxy.cfg.j2" dest="{{ haproxy['config']['cnfpath'] }}" mode=0644
  notify:
    - restart haproxy service

- name: enable haproxy
  template: src="haproxy.default.j2" dest="/etc/default/haproxy" mode=0644
  notify:
    - restart haproxy service
```

```
---
# filename: roles/haproxy/tasks/service.yml
- name: start haproxy server
  service:
    name: "{{ haproxy['service'] }}"
    state: started
```

```
---
# filename: roles/haproxy/handlers/main.yml
- name: restart haproxy service
```

```
service: name="{{ haproxy['service'] }}" state=restarted
```

```
#filename: roles/haproxy/templates/haproxy.cfg.j2
```

```
global
```

```
    log 127.0.0.1    local0
    log 127.0.0.1    local1 notice
    maxconn 4096
    user haproxy
    group haproxy
    daemon
```

```
defaults
```

```
    log        global
    mode       http
    option     httplog
    option     dontlognull
    retries    3
    option     redispatch
    maxconn    2000
    contimeout      5000
    clitimeout      50000
    srvtimeout      50000
```

```
listen fifanews {{ haproxy['config']['listen_address'] }}:{{ haproxy['config']['listen_port'] }}
    cookie SERVERID rewrite
    balance roundrobin
    {% for host in groups['www'] -%}
        server {{ hostvars[host]['ansible_hostname'] }} {{ hostvars[host]['ansible_eth1']['ipv4']['address'] }}:{{ hostvars[host]['nginx']['phpsites']['fifanews']['port'] }} cookie {{ hostvars[host]['inventory_hostname'] }} check
    {% endfor -%}
```

```
---
```

```
#filename: lb.yml
```

```
- hosts: lb
  remote_user: vagrant
  sudo: yes
  roles:
    - { role: haproxy, when: ansible_os_family == 'Debian' }
```

```
# This is a sitewide playbook
```

```
# filename: site.yml
```

```
- include: db.yml
- include: www.yml
- include: lb.yml
```

Das Playbook kann jetzt mit `ansible-playbook -i customhosts site.yml` ausgeführt werden.

den.

1.3 Zugriff auf nicht-playbooks Hosts

Starten wir unser Paybook nur für den Loadbalancer

```
ansible-playbook -i customhosts lb.yml
```

wird ein Fehler auftreten.

Ansible meldet das die Variablen der nicht beteiligten Hosts nicht bekannt sind. Da Ansible die Facts nur im Arbeitsspeicher hält, können wir nach einem Playbook lauf nicht auf "ehemalige" Hosts-facts zugreifen. Darüber hinaus, kann Ansible nur nach einem Durchlauf auf einem Hosts die Fakten an andere Host bekannt geben.

Fact-caching mir Redis

- Installieren von Redis auf dem Ansible Host.
- Die Konfigurationen von Ansible (>1.8) auf Redis einstellen.

```
sudo apt-get install redis-server
sudo service redis-server start
apt-get install python-pip
pip install redis
```

```
# filename: /etc/ansible/ansible.cfg
# Comment following lines
# gathering = smart
# fact_caching = memory
# Add following lines
gathering = smart
fact_caching = redis
fact_caching_timeout = 86400
fact_caching_connection = localhost:6379:0
```

```
ansible-playbook -i customhosts www.yml
redis-cli
keys *
```

```
ansible-playbook -i customhosts lb.yml
```

Caching in Dateien

Daten können auch als JSON-Datei gespeichert werden.

```
# filename: /etc/ansible/ansible.cfg
fact_caching = jsonfile
fact_caching_connection = /tmp/cache
```

```
mkdir /tmp/cache
chmod 777 /tmp/cache
```

```
diff -uNr -X diffignore ../B03800_06_code/projects/lb.yml ./projects/lb.
  yml
--- ../B03800_06_code/projects/lb.yml      1970-01-01 01:00:00.000000000
    +0100
+++ ./projects/lb.yml      2016-03-21 20:11:20.958242789 +0100
@@ -0,0 +1,9 @@
+---
+#filename: lb.yml
+- hosts: lb
+  remote_user: vagrant
+  sudo: yes
+  roles:
+    - { role: haproxy, when: ansible_os_family == 'Debian' }
+
diff -uNr -X diffignore ../B03800_06_code/projects/roles/base/defaults/
  main.yml ./projects/roles/base/defaults/main.yml
--- ../B03800_06_code/projects/roles/base/defaults/main.yml 1970-01-01
    01:00:00.000000000 +0100
+++ ./projects/roles/base/defaults/main.yml 2016-03-21
    20:11:20.958242789 +0100
@@ -0,0 +1,2 @@
+---
+cluster: clusterA
diff -uNr -X diffignore ../B03800_06_code/projects/roles/base/tasks/main
  .yaml ./projects/roles/base/tasks/main.yaml
--- ../B03800_06_code/projects/roles/base/tasks/main.yaml      2016-03-21
    20:11:20.970242789 +0100
+++ ./projects/roles/base/tasks/main.yaml      2016-03-21
    20:11:20.082242764 +0100
@@ -1,8 +1,17 @@
  ---
  # essential tasks. should run on all nodes
- - name: creating devops group
+ - name: creating devops group
+   group: name=devops state=present
- - name: create devops user with admin privileges
+   - name: create devops user with admin privileges
+     user: name=devops comment="Devops User" uid=2001 group=devops
- - name: install htop package
+   - name: install htop package
+     action: apt name=htop state=present update_cache=yes
+   when: ansible_os_family == 'Debian'
+
+

```

```

+# - name: install htop package
+#   action: yum name=htop state=present update_cache=yes
+#   when: ansible_os_family == 'RedHat'
+
+ - name: set cluster id
+   set_fact:
+     cluster: "{{ cluster }}"
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/
    defaults/main.yml ./projects/roles/haproxy/defaults/main.yml
--- ../B03800_06_code/projects/roles/haproxy/defaults/main.yml
    1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/defaults/main.yml    2016-03-21
    20:11:20.958242789 +0100
@@ -0,0 +1,10 @@
+---
+# filename: roles/haproxy/defaults/main.yml
+haproxy:
+  config:
+    cnfpath: /etc/haproxy/haproxy.cfg
+    enabled: 1
+    listen_address: 0.0.0.0
+    listen_port: 8080
+    service: haproxy
+    pkg: haproxy
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/
    handlers/main.yml ./projects/roles/haproxy/handlers/main.yml
--- ../B03800_06_code/projects/roles/haproxy/handlers/main.yml
    1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/handlers/main.yml    2016-03-21
    20:11:20.958242789 +0100
@@ -0,0 +1,4 @@
+---
+# filename: roles/haproxy/handlers/main.yml
+- name: restart haproxy service
+  service: name="{{ haproxy['service'] }}" state=restarted
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/tasks/
    configure.yml ./projects/roles/haproxy/tasks/configure.yml
--- ../B03800_06_code/projects/roles/haproxy/tasks/configure.yml
    1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/tasks/configure.yml    2016-03-21
    20:11:20.958242789 +0100
@@ -0,0 +1,11 @@
+---
+# filename: roles/haproxy/tasks/configure.yml
+ - name: create haproxy config
+   template: src="haproxy.cfg.j2" dest="{{ haproxy['config']['cnfpath']
+     }}" mode=0644
+   notify:
+     - restart haproxy service
+
+ - name: enable haproxy

```

```

+   template: src="haproxy.default.j2" dest=/etc/default/haproxy mode
=0644
+   notify:
+     - restart haproxy service
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/tasks/
install.yml ./projects/roles/haproxy/tasks/install.yml
--- ../B03800_06_code/projects/roles/haproxy/tasks/install.yml
1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/tasks/install.yml 2016-03-21
20:11:20.954242789 +0100
@@ -0,0 +1,5 @@
+---
+# filename: roles/haproxy/tasks/install.yml
+ - name: install haproxy
+   apt:
+     name: "{{ haproxy['pkg'] }}"
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/tasks/
main.yml ./projects/roles/haproxy/tasks/main.yml
--- ../B03800_06_code/projects/roles/haproxy/tasks/main.yml 1970-01-01
01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/tasks/main.yml 2016-03-21
20:11:20.954242789 +0100
@@ -0,0 +1,5 @@
+---
+# filename: roles/haproxy/tasks/main.yml
+- include: install.yml
+- include: configure.yml
+- include: service.yml
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/tasks/
service.yml ./projects/roles/haproxy/tasks/service.yml
--- ../B03800_06_code/projects/roles/haproxy/tasks/service.yml
1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/tasks/service.yml 2016-03-21
20:11:20.954242789 +0100
@@ -0,0 +1,6 @@
+---
+# filename: roles/haproxy/tasks/service.yml
+ - name: start haproxy server
+   service:
+     name: "{{ haproxy['service'] }}"
+     state: started
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/
templates/haproxy.cfg.j2 ./projects/roles/haproxy/templates/haproxy.
cfg.j2
--- ../B03800_06_code/projects/roles/haproxy/templates/haproxy.cfg.j2
1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/templates/haproxy.cfg.j2 2016-03-21
20:11:20.954242789 +0100
@@ -0,0 +1,27 @@
+#filename: roles/haproxy/templates/haproxy.cfg.j2
+global

```

```

+         log 127.0.0.1    local0
+         log 127.0.0.1    local1 notice
+         maxconn 4096
+         user haproxy
+         group haproxy
+         daemon
+
+defaults
+     log      global
+     mode     http
+     option   httplog
+     option   dontlognull
+     retries  3
+     option   redispatch
+     maxconn  2000
+     timeout  5000
+     clitimeout 50000
+     srvtimeout 50000
+
+listen  fifanews {{ haproxy['config']['listen_address'] }}:{{ haproxy['config']['listen_port'] }}
+     cookie SERVERID rewrite
+     balance roundrobin
+     {% for host in groups['www'] -%}
+     server  {{ hostvars[host]['ansible_hostname'] }} {{ hostvars[host]['ansible_eth1']['ipv4']['address'] }}:{{ hostvars[host]['nginx']['phpsites']['fifanews']['port'] }} cookie {{ hostvars[host]['inventory_hostname'] }} check
+     {% endfor -%}
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/templates/haproxy.default.j2 ./projects/roles/haproxy/templates/haproxy.default.j2
--- ../B03800_06_code/projects/roles/haproxy/templates/haproxy.default.j2    1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/templates/haproxy.default.j2    2016-03-21 20:11:20.954242789 +0100
@@ -0,0 +1,2 @@
+#filename: roles/haproxy/templates/haproxy.default
+ENABLED="{{ haproxy['config']['enabled'] }}"
\ Kein Zeilenumbruch am Dateiende.
diff -uNr -X diffignore ../B03800_06_code/projects/roles/haproxy/vars/main.yml ./projects/roles/haproxy/vars/main.yml
--- ../B03800_06_code/projects/roles/haproxy/vars/main.yml    1970-01-01 01:00:00.000000000 +0100
+++ ./projects/roles/haproxy/vars/main.yml    2016-03-21 20:11:20.954242789 +0100
@@ -0,0 +1,2 @@
+---
+# vars file for haproxy
diff -uNr -X diffignore ../B03800_06_code/projects/roles/mysql/tasks/install_RedHat.yml ./projects/roles/mysql/tasks/install_RedHat.yml

```



```

--- ../B03800_06_code/projects/roles/mysql/tasks/install_RedHat.yml
    2016-03-21 20:11:19.994242761 +0100
+++ ../projects/roles/mysql/tasks/install_RedHat.yml 2016-03-21
    20:11:20.950242789 +0100
@@ -1,8 +1,8 @@
---
# filename: roles/mysql/tasks/install_RedHat.yml
- name: install mysql server
- yum:
-   name: "{{ mysql['pkg']['server'] }}"
+ yum:
+   name: "{{ mysql['pkg']['server'] }}"
  when: mysql.server

- name: install mysql python binding
diff -uNr -X diffignore ../B03800_06_code/projects/roles/mysql/vars/
    RedHat.yml ../projects/roles/mysql/vars/RedHat.yml
--- ../B03800_06_code/projects/roles/mysql/vars/RedHat.yml 2016-04-01
    08:25:00.000000000 +0200
+++ ../projects/roles/mysql/vars/RedHat.yml 2016-03-21
    20:11:20.950242789 +0100
@@ -8,6 +8,5 @@
    bind: 0.0.0.0
    pkg:
      server: mariadb-server
-   client: mariadb-client
      python: MySQL-python
      service: mariadb
diff -uNr -X diffignore ../B03800_06_code/projects/roles/nginx/tasks/
    install.yml ../projects/roles/nginx/tasks/install.yml
--- ../B03800_06_code/projects/roles/nginx/tasks/install.yml
    2016-04-01 08:25:00.000000000 +0200
+++ ../projects/roles/nginx/tasks/install.yml 2016-03-21
    20:11:20.950242789 +0100
@@ -1,5 +1,8 @@
---
- name: add official nginx repository
- apt_repository: repo='deb http://nginx.org/packages/ubuntu/ lucid
  nginx '
+ apt_repository:
+   repo: 'ppa:nginx/stable '
+   state: absent
+
- name: install nginx web server and ensure its at the latest version
  apt: name=nginx state=latest force=yes
diff -uNr -X diffignore ../B03800_06_code/projects/roles/nginx/tasks/
    main.yml ../projects/roles/nginx/tasks/main.yml
--- ../B03800_06_code/projects/roles/nginx/tasks/main.yml 2016-03-21
    20:11:20.966242789 +0100
+++ ../projects/roles/nginx/tasks/main.yml 2016-03-21
    20:11:20.950242789 +0100

```

```

@@ -3,5 +3,3 @@
- include: install.yml
- include: configure.yml
- include: service.yml
-
-
diff -uNr -X diffignore ../B03800_06_code/projects/roles/php5-fpm/tasks/
install.yml ./projects/roles/php5-fpm/tasks/install.yml
--- ../B03800_06_code/projects/roles/php5-fpm/tasks/install.yml
2016-03-21 20:11:20.054242763 +0100
+++ ./projects/roles/php5-fpm/tasks/install.yml 2016-03-21
20:11:20.946242789 +0100
@@ -1,17 +1,8 @@
-#filename: roles/php5-fpm/tasks/install.yml
-# - name: Add an Apt signing key,
-#   apt_key:
-#     id: B12D0447319F1ADB
-#     url: https://sektioneins.de/files/repository.asc
-#     state: present
-
-# - name: /etc/apt/sources.list for Ubuntu trusty (stable) (amd64 only
-)
-#   apt_repository:
-#     repo: 'deb http://repo.suhosin.org/ ubuntu-trusty main'
-
+ #filename: roles/php5-fpm/tasks/install.yml
+ - name: install php5-fpm and family
+   apt:
+     name: "{{ item }}"
+     with_items: php5.packages
+     notify:
+       - restart php5-fpm service
+
diff -uNr -X diffignore ../B03800_06_code/projects/roles/wordpress/
defaults/main.yml ./projects/roles/wordpress/defaults/main.yml
--- ../B03800_06_code/projects/roles/wordpress/defaults/main.yml
2016-03-21 20:11:20.962242789 +0100
+++ ./projects/roles/wordpress/defaults/main.yml 2016-03-21
20:11:20.174242766 +0100
@@ -3,8 +3,8 @@
wp_srcdir: /usr/local/src
wp_docroot: /var/www
wp_sitedir: fifanews
-wp_user: nginx
-wp_group: nginx
+wp_user: www-data
+wp_group: www-data
wp_dbname: fifanews
wp_dbuser: fifa
wp_dbpass: supersecure1234

```

```

diff -uNr -X diffignore ../B03800_06_code/projects/roles/wordpress/tasks
/configure.yml ./projects/roles/wordpress/tasks/configure.yml
--- ../B03800_06_code/projects/roles/wordpress/tasks/configure.yml
    2016-03-21 20:11:20.054242763 +0100
+++ ./projects/roles/wordpress/tasks/configure.yml    2016-03-21
    20:11:20.174242766 +0100
@@ -23,3 +23,4 @@
     src: wp-config.php.j2
     dest: "{{ wp_docroot }}/{{ wp_sitedir }}/wp-config.php"
     mode: 0644
+
\ Kein Zeilenumbruch am Dateiende.
diff -uNr -X diffignore ../B03800_06_code/projects/site.yml ./projects/
site.yml
--- ../B03800_06_code/projects/site.yml    2016-03-21 20:11:20.962242789
    +0100
+++ ./projects/site.yml    2016-03-21 20:11:20.942242788 +0100
@@ -1,5 +1,6 @@
---
# This is a sitewide playbook
# filename: site.yml
-- include: www.yml
- include: db.yml
+- include: www.yml
+- include: lb.yml
diff -uNr -X diffignore ../B03800_06_code/projects/www.yml ./projects/
www.yml
--- ../B03800_06_code/projects/www.yml    2016-03-21 20:11:20.958242789
    +0100
+++ ./projects/www.yml    2016-03-21 20:11:20.942242788 +0100
@@ -11,4 +11,6 @@
    post_tasks:
      - shell: echo 'I':" Done configuring nginx web server...'

-
+ vars:
+   cluster:
+   id: clusterB

```