

Automatiser avec Ansible

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Bonjour



- Antoine Méausoone
 - Développeur

Sfeir

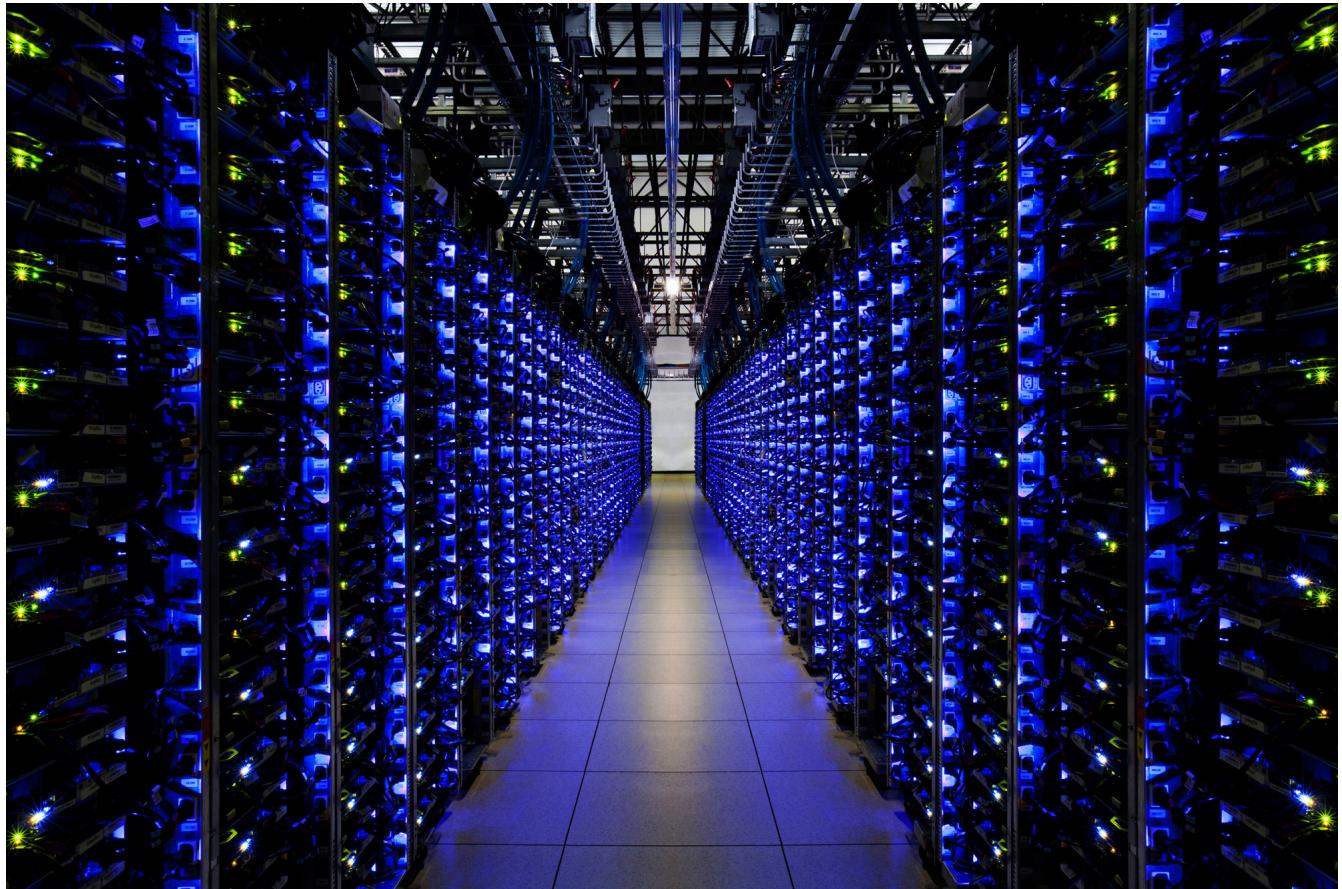
[sf≡ir]



Problème

[background] | ./images/sfeir_fond_big.jpg

Comment ?



Comment gérer tous ces serveurs aujourd'hui ?



Comment gérer tous ces serveurs aujourd'hui ?

Comment ?

[background] | ./images/sfeir_fond_big.jpg

- Accélérer les déploiements ?
- Fiabiliser les environnements ?
- Faciliter la gestion des serveurs ?
- Automatiser les tâches récurrentes ?

Let's code this !



Scripts shell ?

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- Pas "Idempotent"
- Pas robuste
- Maintenabilité ?

La Solution ?

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Provisionning

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A N S I B L E

Pourquoi Ansible ?

[background] | ./images/sfeir_fond_big.jpg

- Pas d'agents, pas de master
- Configuration en YAML
- S'installe avec un simple package
- Très simple à apprendre et à utiliser
- Des centaines de modules (+ de 600 aujourd'hui)

Historique

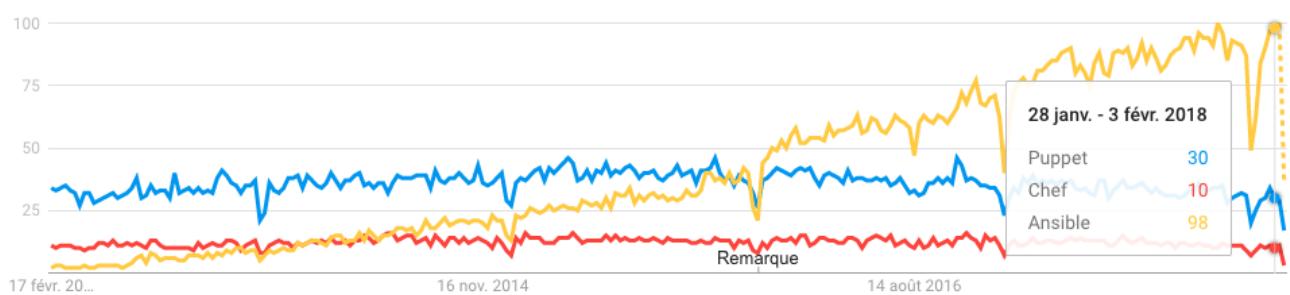
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- Créé en 2012 par [Michael DeHaan](#) pour créer un outil simple par rapport aux concurrents Chef et Puppet

- Racheté par RedHat en 2015
- Actuellement en version Ansible v2.4

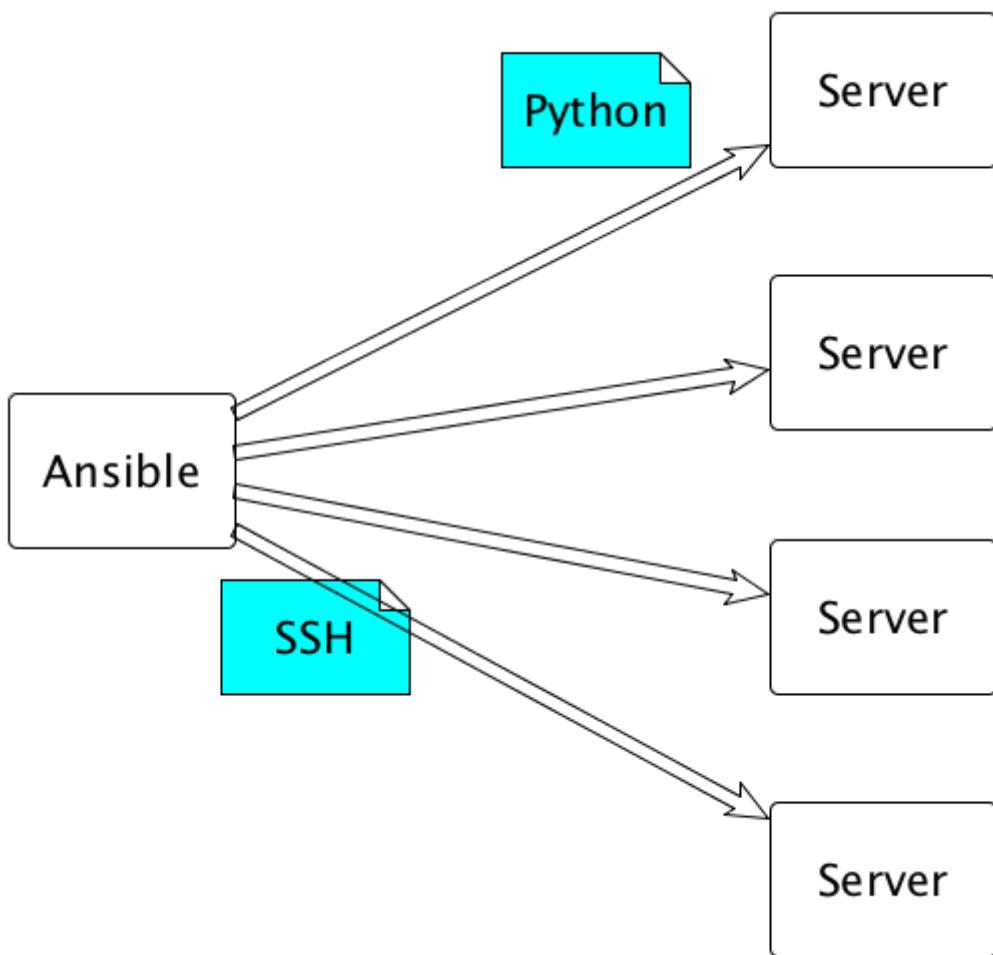
Trends

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Comment ça marche ?

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Installation

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sudo pip install ansible

Commandes principales

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- **ansible** <host-pattern> -m <module> -a <module options> [options]
- **ansible-playbook** playbook.yml [options]

Commandes secondaires

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- **ansible-galaxy** [delete|import|info|init|install|list|login|remove|search|setup] [--help] [options]
- **ansible-vault** [create|decrypt|edit|encrypt|rekey|view] [--help] [options] vaultfile.yml

Concepts

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- **Inventory**
- **Commandes ad-hoc et les modules**
- **Playbooks**
- **Roles**

Inventory

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- Inventaire des machines gérées par Ansible
- Emplacement :
 - Par défaut : /etc/ansible/host
 - Option "-i" : ansible -i hosts
 - Défini dans **ansible.cfg**
- Inventaire dynamique : AWS, DigitalOcean, ou un script custom

Inventory | Exemples

[background] | ./images/sfeir_fond_big.jpg

```
[front]          # un groupe
front1         # les machines du groupes
front2

[middle]
middle[1-2]      # pattern

[backend]
backend

[myenvironment:children] # un groupe de groupe
front
middle
backend
```

Commandes Ad-hoc

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Commandes Ad-hoc

[background] | ./images/sfeir_fond_big.jpg

- Une simple ligne de commande
- Pour exécuter une tâche | module
- En parallèle
- Ex : Redémarrer httpd sur mes serveurs web
- Ex : Installer un package sur mes bdd

Module Ping

[background] | ./images/sfeir_fond_big.jpg

- Vérifier la connexion sur les serveurs
- On peut spécifier "all", un groupe ou un pattern de machines
- s'exécute en parallèle

Commandes Ad-hoc | Module Ping

[background] | ./images/sfeir_fond_big.jpg

```
ansible all -m ping
```

```
backend | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
front | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
zabbixserver | SUCCESS => {
    "changed": false,
    "ping": "pong"
}
```

Module Setup

[background] | ./images/sfeir_fond_big.jpg

- Collecte des informations sur le système
- Ip, nom, OS, montage, disques
- Peut-être utilisé dans des conditions (playbook)

Commandes Ad-hoc | Module Setup

[background] | ./images/sfeir_fond_big.jpg

```
ansible front -m setup
```

```
front | SUCCESS => {
    "ansible_facts": {
        "ansible_all_ipv4_addresses": [
            "172.21.0.4"
        ],
        "ansible_all_ipv6_addresses": [
            "fe80::42:acff:fe15:4"
        ],
        "ansible_architecture": "x86_64",
        "ansible_bios_date": "03/14/2014",
        "ansible_bios_version": "1.00",
        "ansible_date_time": {
            "date": "2017-03-14",
            "day": "14",
            "epoch": "1489509846",
            "hour": "16",
            "iso8601": "2017-03-14T16:44:06Z",
            "iso8601_basic": "20170314T164406313031",
            "iso8601_basic_short": "20170314T164406",
        }
    }
}
```

```

    "iso8601_micro": "2017-03-14T16:44:06.313111Z",
    "minute": "44",
    "month": "03",
    "second": "06",
    "time": "16:44:06",
    "tz": "UTC",
    "tz_offset": "+0000",
    "weekday": "Tuesday",
    "weekday_number": "2",
    "weeknumber": "11",
    "year": "2017"
},
"ansible_default_ipv4": {
    "address": "172.21.0.4",
    "alias": "eth0",
    "broadcast": "global",
    "gateway": "172.21.0.1",
    "interface": "eth0",
    "macaddress": "02:42:ac:15:00:04",
    "mtu": 1500,
    "netmask": "255.255.0.0",
    "network": "172.21.0.0",
    "type": "ether"
},
"ansible_distribution": "CentOS",
"ansible_distribution_major_version": "6",
"ansible_distribution_release": "Final",
"ansible_distribution_version": "6.8",
"ansible_dns": {
    "nameservers": [
        "127.0.0.11"
    ],
    "options": {
        "ndots": "0"
    }
},
"ansible_domain": "",
"ansible_env": {
    "G_BROKEN_FILERAMES": "1",
    "HOME": "/root",
    "LANG": "en_US.UTF-8",
    "LESSOPEN": "| /usr/bin/lesspipe.sh %s",
    "LOGNAME": "root",
    "MAIL": "/var/mail/root",
    "PATH": "/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin",
    "PWD": "/root",
    "SHELL": "/bin/bash",
    "SHLVL": "2",
    "SSH_CLIENT": "172.21.0.5 37576 22",
    "SSH_CONNECTION": "172.21.0.5 37576 172.21.0.4 22",
    "SSH_TTY": "/dev/pts/0",
}

```

```

    "TERM": "xterm",
    "USER": "root",
    "_": "/usr/bin/python"
},
"ansible_ether0": {
    "active": true,
    "device": "eth0",
    "features": {
        "busy_poll": "off [fixed]",
        "fcoe_mtu": "off [fixed]",
        "generic_receive_offload": "on",
        "generic_segmentation_offload": "on",
        "highdma": "on",
        "hw_tc_offload": "off [fixed]",
        "l2_fwd_offload": "off [fixed]",
        "large_receive_offload": "off [fixed]",
        "loopback": "off [fixed]",
        "netns_local": "off [fixed]",
        "ntuple_filters": "off [fixed]",
        "receive_hashing": "off [fixed]",
        "rx_all": "off [fixed]",
        "rx_checksumming": "on",
        "rx_fcs": "off [fixed]",
        "rx_vlan_filter": "off [fixed]",
        "rx_vlan_offload": "on",
        "rx_vlan_stag_filter": "off [fixed]",
        "rx_vlan_stag_hw_parse": "on",
        "scatter_gather": "on",
        "tcp_segmentation_offload": "on",
        "tx_checksum_fcoe_crc": "off [fixed]",
        "tx_checksum_ip_generic": "on",
        "tx_checksum_ipv4": "off [fixed]",
        "tx_checksum_ipv6": "off [fixed]",
        "tx_checksum_sctp": "on",
        "tx_checksumming": "on",
        "tx_fcoe_segmentation": "off [fixed]",
        "tx_gre_csum_segmentation": "on",
        "tx_gre_segmentation": "on",
        "tx_gso_partial": "off [fixed]",
        "tx_gso_robust": "off [fixed]",
        "tx_ipip4_segmentation": "on",
        "tx_ipip6_segmentation": "on",
        "tx_lockless": "on [fixed]",
        "tx_nocache_copy": "off",
        "tx_scatter_gather": "on",
        "tx_scatter_gather_fraglist": "on",
        "tx_sctp_segmentation": "on",
        "tx_tcp6_segmentation": "on",
        "tx_tcp_ecn_segmentation": "on",
        "tx_tcp_mangleid_segmentation": "on",
        "tx_tcp_segmentation": "on",
    }
}

```

```

        "tx_udp_tnl_csum_segmentation": "on",
        "tx_udp_tnl_segmentation": "on",
        "tx_vlan_offload": "on",
        "tx_vlan_stag_hw_insert": "on",
        "udp_fragmentation_offload": "on",
        "vlan_challenged": "off [fixed]"
    },
    "ipv4": {
        "address": "172.21.0.4",
        "broadcast": "global",
        "netmask": "255.255.0.0",
        "network": "172.21.0.0"
    },
    "ipv6": [
        {
            "address": "fe80::42:acff:fe15:4",
            "prefix": "64",
            "scope": "link"
        }
    ],
    "macaddress": "02:42:ac:15:00:04",
    "mtu": 1500,
    "promisc": false,
    "speed": 10000,
    "type": "ether"
},
"ansible_fips": false,
"ansible_form_factor": "Unknown",
"ansible_fqdn": "4da41820e9a5",
"ansible_gather_subset": [
    "hardware",
    "network",
    "virtual"
],
"ansible_hostname": "4da41820e9a5",
"ansible_interfaces": [
    "gre0",
    "ip6tnl0",
    "lo",
    "tunl0",
    "ip6_vti0",
    "gretap0",
    "sit0",
    "ip6gre0",
    "ip_vti0",
    "eth0"
],
"ansible_kernel": "4.9.12-moby",
"ansible_machine": "x86_64",
"ansible_memfree_mb": 290,
"ansible_memory_mb": {

```

```

    "nocache": {
        "free": 1293,
        "used": 705
    },
    "real": {
        "free": 290,
        "total": 1998,
        "used": 1708
    },
    "swap": {
        "cached": 0,
        "free": 3994,
        "total": 3994,
        "used": 0
    }
},
"ansible_memtotal_mb": 1998,
"ansible_mounts": [
{
    "device": "/dev/vda2",
    "fstype": "ext4",
    "mount": "/etc/resolv.conf",
    "options": "rw,relatime,data=ordered,bind",
    "size_available": 55290834944,
    "size_total": 63381999616,
    "uuid": "N/A"
},
{
    "device": "/dev/vda2",
    "fstype": "ext4",
    "mount": "/etc/hostname",
    "options": "rw,relatime,data=ordered,bind",
    "size_available": 55290834944,
    "size_total": 63381999616,
    "uuid": "N/A"
},
{
    "device": "/dev/vda2",
    "fstype": "ext4",
    "mount": "/etc/hosts",
    "options": "rw,relatime,data=ordered,bind",
    "size_available": 55290834944,
    "size_total": 63381999616,
    "uuid": "N/A"
}
],
"ansible_nodename": "4da41820e9a5",
"ansible_os_family": "RedHat",
"ansible_pkg_mgr": "yum",
"ansible_processor": [
    "GenuineIntel",

```

```

        "Intel(R) Core(TM) i7-4770HQ CPU @ 2.20GHz",
        "GenuineIntel",
        "Intel(R) Core(TM) i7-4770HQ CPU @ 2.20GHz",
        "GenuineIntel",
        "Intel(R) Core(TM) i7-4770HQ CPU @ 2.20GHz",
        "GenuineIntel",
        "Intel(R) Core(TM) i7-4770HQ CPU @ 2.20GHz"
    ],
    "ansible_processor_cores": 1,
    "ansible_processor_count": 4,
    "ansible_processor_threads_per_core": 1,
    "ansible_processor_vcpus": 4,
    "ansible_product_name": "BHYVE",
    "ansible_product_serial": "None",
    "ansible_product_uuid": "1384B81A-C34C-E039-A3D0-76E55EDE16BC",
    "ansible_product_version": "1.0",
    "ansible_python": {
        "executable": "/usr/bin/python",
        "has_sslcontext": false,
        "type": "CPython",
        "version": {
            "major": 2,
            "micro": 6,
            "minor": 6,
            "releaselevel": "final",
            "serial": 0
        },
        "version_info": [
            2,
            6,
            6,
            "final",
            0
        ]
    },
    "ansible_python_version": "2.6.6",
    "ansible_selinux": false,
    "ansible_service_mgr": "sshd",
    "ansible_ssh_host_key_dsa_public": "AAAAB3NzaC1kc3MAAACBALkg0tMWMj44kJdUkoTEdnHosc0jhcfB0uAFgWZZKj42KRyVogp+EjR3wzN8BLuD  
Ni80KjNqa7dxAuHenzAX39p/rdEBQXhcb03AnuErMtXvx/2+CGRUaerXPj5qy0e53B5sPfAKQX+rWZ16HqtFKR  
z6QA0gbf93eV7YMHy1WDPAAAAFQD6bC//7Dt2ZIsRybv7sQT2joHHlQAAIEAhc04iHzYR3ZE0qcs4oV1Dka0n  
rp0a74W3DEieGfxqlRZVGo+fWMg06GE1bKEq+WFdS0XLJuLYtvbUuu/6MKUc0eNj88A9aD0uU9Mqbuo4mHCukc  
xDo4FsWCDfP6K0GnTNBm2LPX0qDA/LjffbaZenoXXRWkW1NPuMuiz8s7uK+wAACAdMZJJkyRxLsVEB4jmXKEc  
FOZ2b5Uj1FUScolNPqbjWyYpB2EkGND+Bg7h0xhJruT5fDu0V28X+Pm3fcVWzPEank88T8/7TagUpF+WjGkWQ6  
EaE1R0n1PZ6m5tM0rlWXAAV9V7MwlXqQT508VBzyk08Z07fgXdd+nJ4wOT+ymY4=",
        "ansible_ssh_host_key_rsa_public": "AAAAB3NzaC1yc2EAAAABIwAAAQEAvgFCRM1GQ2VGhNfftReWaJ7tNOxiMNk0z/Uj8oIyFVbnr9aeFckoY4Jogx  
MYqMZUivbuQo+Dh1AhE/x4Z0GqKr0pZILARQyEgEpd0IEdQ4fDKN93ZsCUFE6DmYmmEm+CjQ5y7S3wz04A/nwc  
yjEMvjL9wt5sVmXZaxIXyvlDs1opM8YvZhv2S6AZJ5ck+5am8AIYAyvnwbbPpAH6C1XwycZJW3hMw0VzfWz/  
4HyK4lsRItRkiCNosbls+Li0WpZ44/R4vEcG1l6dtekaWllqlzF7JFgKauFScU7TiYGIH9o/13Lj5H00IazAwn

```

```

NkbYkqRJkqB6wPSsqx6k1K1n2Yw==",
    "ansible_swapfree_mb": 3994,
    "ansible_swaptotal_mb": 3994,
    "ansible_system": "Linux",
    "ansible_system_capabilities_enforced": "True",
    "ansible_system_vendor": "NA",
    "ansible_uptime_seconds": 217034,
    "ansible_user_dir": "/root",
    "ansible_user_gecos": "root",
    "ansible_user_gid": 0,
    "ansible_user_id": "root",
    "ansible_user_shell": "/bin/bash",
    "ansible_user_uid": 0,
    "ansible_userspace_architecture": "x86_64",
    "ansible_userspace_bits": "64",
    "ansible_virtualization_role": "guest",
    "ansible_virtualization_type": "docker",
    "module_setup": true
},
"changed": false
}

```

Module yum

- Installer/Désinstaller/Mettre à jour un package
- Gestion des repos yum
- Mise à jour du cache

Commandes Ad-hoc | Module yum

ansible front -m yum -a "name=httpd state=present"

```

front | SUCCESS => {
    "changed": true,
    "msg": "",
    "rc": 0,
    "results": [
        "Loaded plugins: fastestmirror, ovl\nSetting up Install Process\nLoading
        mirror speeds from cached hostfile\n * base: distrib-coffee.ipsl.jussieu.fr\n *
        extras: distrib-coffee.ipsl.jussieu.fr\n * updates: ftp.ciril.fr\nResolving
        Dependencies\n--> Running transaction check\n--> Package httpd.x86_64 0:2.2.15-
        56.el6.centos.3 will be installed\n--> Processing Dependency: httpd-tools = 2.2.15-
        56.el6.centos.3 for package: httpd-2.2.15-56.el6.centos.3.x86_64\n--> Processing
        Dependency: apr-util-ldap for package: httpd-2.2.15-56.el6.centos.3.x86_64\n-->
        Processing Dependency: /etc/mime.types for package: httpd-2.2.15-
        56.el6.centos.3.x86_64\n--> Processing Dependency: libaprutil-1.so.0()(64bit) for
        package: httpd-2.2.15-56.el6.centos.3.x86_64\n--> Processing Dependency: libapr-
        1.so.0()(64bit) for package: httpd-2.2.15-56.el6.centos.3.x86_64\n--> Running

```

```

transaction check\n--> Package apr.x86_64 0:1.3.9-5.el6_2 will be installed\n-->
Package apr-util.x86_64 0:1.3.9-3.el6_0.1 will be installed\n--> Package apr-util-
ldap.x86_64 0:1.3.9-3.el6_0.1 will be installed\n--> Package httpd-tools.x86_64
0:2.2.15-56.el6.centos.3 will be installed\n--> Package mailcap.noarch 0:2.1.31-2.el6
will be installed\n--> Finished Dependency Resolution\n\nDependencies
Resolved\n\n=====
=====\n Package          Arch    Version           Repository
Size\n=====
\nInstalling: \n httpd          x86_64   2.2.15-56.el6.centos.3   updates
834 k\nInstalling for dependencies:\n apr            x86_64   1.3.9-3.el6_0.1   base
base      123 k\n apr-util        x86_64   1.3.9-3.el6_0.1   base
87 k\n httpd-tools     x86_64   2.2.15-56.el6.centos.3   updates
mailcap       noarch   2.1.31-2.el6   base
79 k\n
k\n\nTransaction
Summary\n=====
==\nInstall      6 Package(s)\n\nTotal download size: 1.1 M\n\nInstalled size: 3.7
M\n\nDownloading
Packages:\n-----
-----\nTotal                      547 kB/s | 1.1 MB  00:02
\nRunning rpm_check_debug\nRunning Transaction Test\nTransaction Test
Succeeded\nRunning Transaction\n\nr  Installing : apr-1.3.9-5.el6_2.x86_64
1/6 \n\r  Installing : apr-util-1.3.9-3.el6_0.1.x86_64
2/6 \n\r  Installing : apr-util-ldap-1.3.9-3.el6_0.1.x86_64
3/6 \n\r  Installing : httpd-tools-2.2.15-56.el6.centos.3.x86_64
4/6 \n\r  Installing : mailcap-2.1.31-2.el6.noarch
5/6 \n\r  Installing : httpd-2.2.15-56.el6.centos.3.x86_64
6/6 \n\r  Verifying  : httpd-2.2.15-56.el6.centos.3.x86_64
1/6 \n\r  Verifying  : apr-util-ldap-1.3.9-3.el6_0.1.x86_64
2/6 \n\r  Verifying  : apr-1.3.9-5.el6_2.x86_64
3/6 \n\r  Verifying  : httpd-tools-2.2.15-56.el6.centos.3.x86_64
4/6 \n\r  Verifying  : mailcap-2.1.31-2.el6.noarch
5/6 \n\r  Verifying  : apr-util-1.3.9-3.el6_0.1.x86_64
6/6 \n\nInstalled:\n httpd.x86_64 0:2.2.15-56.el6.centos.3
\n\nDependency Installed:\n apr.x86_64 0:1.3.9-5.el6_2
\n  apr-util.x86_64 0:1.3.9-3.el6_0.1
\n  apr-util-ldap.x86_64 0:1.3.9-3.el6_0.1
\n  httpd-tools.x86_64 0:2.2.15-56.el6.centos.3
\n  mailcap.noarch 0:2.1.31-2.el6
\n\nComplete!\n"
]
}

```

Module service

[background] | ./images/sfeir_fond_big.jpg

- Contrôle les services : stop, start, restart, enabled
- Gère : BSD init, OpenRC, SysV, Solaris SMF, systemd, upstart.

Commandes Ad-hoc | Module service

[background] | ./images/sfeir_fond_big.jpg

```
ansible front -m service -a "name=httpd state=started enabled=yes"
```

```
front | SUCCESS => {
    "changed": true,
    "enabled": true,
    "name": "httpd",
    "state": "started"
}
```

Autres modules pratiques

[background] | ./images/sfeir_fond_big.jpg

- **user** : gestion des utilisateurs (et groupes) systèmes
 - **lineinfile** : ajout (ou suppression) d'une ligne dans un fichier basé sur des regex
 - **copy** : copie de fichiers sur les serveurs
 - **fetch** : récupération de fichiers depuis les serveurs
 - **mount** : gestion des montages
- i**
- **user** : gestion des utilisateurs (et groupes) systèmes
 - **lineinfile** : ajout (ou suppression) d'une ligne dans un fichier basé sur des regex
 - **copy** : copie de fichiers sur les serveurs
 - **fetch** : récupération de fichiers depuis les serveurs
 - **mount** : gestion des montages

Autres modules pratiques (2)

[background] | ./images/sfeir_fond_big.jpg

- **authorized_key**
 - **mysql_db, mysql_user, (*postgresql_[db|user])**
 - **git**
- i**
- **authorized_key**
 - **mysql_db, mysql_user, (*postgresql_[db|user])**
 - **git**

Clustering Modules

[background] | ./images/sfeir_fond_big.jpg

- **consul**
- **kubernetes**
- **oc** OpenShift - New in version 2.4

Modules | Documentation

[background] | ./images/sfeir_fond_big.jpg

<http://docs.ansible.com/ansible/>

Playbooks

[background] | ./images/sfeir_fond_big.jpg



OK avec les commandes ad-hoc, on a fait des actions très pratique sur les machines, en parallèle, Mais on exécute qu'une commande à la fois, pas de variabilisation, pas d'orchestration.

Ok can we code now ?

[background] | ./images/sfeir_fond_big.jpg

- Language Ansible pour la configuration, l'orchestration et le déploiement
- Programmation déclarative
- Yaml !
- On fait quoi sur quelles machines ?
 - Language Ansible pour la configuration, l'orchestration et le déploiement
 - Programmation déclarative
 - Yaml !
 - On fait quoi sur quelles machines ?

Playbooks

[background] | ./images/sfeir_fond_big.jpg

```

- hosts: webservers
  vars:
    http_port: 80
    max_clients: 200
  remote_user: root
  tasks:
    - name: ensure apache is at the latest version
      yum: name=httpd state=latest
    - name: write the apache config file
      template: src=/srv/httpd.j2 dest=/etc/httpd.conf
      notify:
        - restart apache
    - name: ensure apache is running (and enable it at boot)
      service: name=httpd state=started enabled=yes
  handlers:
    - name: restart apache
      service: name=httpd state=restarted

```

- On installe la dernière version du package httpd
- On va copier le template du fichier de conf httpd.conf
 - On notifie le handler qu'il est nécessaire de redémarrer httpd
- On active le service httpd et on démarre si ça n'est pas déjà fait
- Si nécessaire on redémarre le service



Playbooks | Exécution

[background] | ./images/sfeir_fond_big.jpg

ansible-playbook playbook.yml

Variabes

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vars/main.yml

```
httpd_version: 2.3
```

tasks/main.yml

```

- name: Ensure httpd is installed
  yum: name= "httpd"
    state= present
  version= {{ httpd_version }}

```



- Exemple simple
- Mais les variables vont nous servir à bien plus de choses, on va voir ça juste après.

Organisation du répertoire playbooks

[background] | ./images/sfeir_fond_big.jpg

```
playbooks/
├── hosts
├── groups_vars
│   ├── all
│   │   └── vars.yml
│   ├── prod
│   │   └── vars.yml
│   ├── dev
│   │   └── vars.yml
│   └── qualif
│       └── vars.yml
├── host_vars
│   ├── webserver01
│   │   └── vars.yml
│   └── database02
│       └── vars.yml
└── site.yml
└── webservers.yml
└── database.yml
```

Condition

[background] | ./images/sfeir_fond_big.jpg

Utilise des variables ou des facts (setup)

Pour exécuter un module

```
- name: Install Apache (Ubuntu)
  apt: name=apache state=latest
  when: ansible_os_family == 'Debian'

- name: Install Apache (CentOS)
  yum: name=httpd state=latest
  when: ansible_os_family == 'RedHat'
```

Condition (2)

[background] | ./images/sfeir_fond_big.jpg

Pour faire un "include"

```
- include: tasks/sometasks.yml
when: "'reticulating splines' in output"
```

Boucle

[background] | ./images/sfeir_fond_big.jpg

```
- name: add several users
  user:
    name: "{{ item }}"
    state: present
    groups: "wheel"
  with_items:
    - testuser1
    - testuser2
```

Boucle avec des objets

[background] | ./images/sfeir_fond_big.jpg

```
- name: add several users
  user:
    name: "{{ item.name }}"
    state: present
    groups: "{{ item.groups }}"
  with_items:
    - { name: 'testuser1', groups: 'wheel' }
    - { name: 'testuser2', groups: 'root' }
```

Templates (Jinja2)

[background] | ./images/sfeir_fond_big.jpg

```

# Generated by Ansible for {{ansible_fqdn}}
{% if step_main_version == 'v7' %}
export JDK_HOME={{ jdk_home }}
export JAVA_HOME={{ jdk_home }}
{% endif %}
{% if step_jmx_enabled %}
export JAVA_OPTS="{{ java_opts }} {{ step_jmx_options }}"
{% else %}
export JAVA_OPTS="{{ java_opts }}"
{% endif %}

```

Rolling Updates

[background] | ./images/sfeir_fond_big.jpg

```

- name: test play
  hosts: webservers
  serial:
    - "10%"
    - "20%"
  max_fail_percentage: 5

```

Delegation

[background] | ./images/sfeir_fond_big.jpg

```

- hosts: webservers
  serial: 5
  tasks:
    - name: take out of load balancer pool
      command: /usr/bin/take_out_of_pool {{ inventory_hostname }}
      delegate_to: {{loadbalancer}}

```

```

# ...
tasks:
  - name: take out of load balancer pool
    local_action: command /usr/bin/take_out_of_pool {{ inventory_hostname }}

```

Playbook | Problèmes

[background] | ./images/sfeir_fond_big.jpg

- Très pratique mais...

- Manque de généricté
- Difficilement réutilisable



- Très pratique mais...
- Manque de généricté
- Difficilement réutilisable

Roles

[background] | ./images/sfeir_fond_big.jpg

- Organiser son playbook
- Basé sur des conventions (tasks, handlers, vars ...)
- Réutilisable !!
- Un role ⇒ un groupe de machine
 - Ex: rôle « apache_httpd » ⇒ serveurs « front »
 - Organiser son playbook
 - Basé sur des conventions (tasks, handlers, vars ...)
 - Réutilisable !!
 - Un role => un groupe de machine
 - Ex: rôle « apache_httpd » => serveurs « front »



Roles | Organisation

[background] | ./images/sfeir_fond_big.jpg

```

playbooks/
├── hosts
├── group_vars
└── roles
    ├── ansible_role_httpd
    │   ├── defaults
    │   │   └── main.yml
    │   ├── files
    │   │   └── <file.txt>
    │   ├── handlers
    │   │   └── main.yml
    │   ├── templates
    │   │   └── <httpd.nj2>
    │   ├── tasks
    │   │   └── main.yml
    │   └── vars
    │       └── main.yml
    └── ansible_role_mysql
        ├── defaults
        │   └── main.yml
        ├── files
        │   └── <file.txt>
        ├── handlers
        │   └── main.yml
        ├── templates
        │   └── <mysql.conf.nj2>
        ├── tasks
        │   └── main.yml
        └── vars
            └── main.yml
└── site.yml

```

Roles | Organisation

[background] | ./images/sfeir_fond_big.jpg

- **tasks** : Contient les modules à exécuter (point d'entrée du rôle)
- **handlers** : Contient les modules à "notifier" (en cas de changement)
- **vars** : Contient les variables (RedHat / Ubuntu par exemple)
- **defaults** : Les variables par défaut
- **templates** : Les fichiers à templatiser
- **files** : Les fichiers statiques
- **meta** : Contient les dépendances du rôle

Roles | Playbook

[background] | ./images/sfeir_fond_big.jpg

```
- name: Install httpd on webservers
  hosts: webservers
  roles:
    - ansible-role-apache
```

Ansible-galaxy

[background] | ./images/sfeir_fond_big.jpg

Galaxy is your hub for finding, reusing and sharing the best Ansible content

ABOUT EXPLORE BROWSE ROLES BROWSE AUTHORS SIGN IN

Log Into Galaxy with GitHub

DOWNLOAD SHARE

★ FEATURED

ROLE: carlosbuenosvinos.ansistrano-deploy - Ansible role to deploy scripting applications like PHP, Python, Ruby, etc. in a Capistrano style

AUTHOR: andrewrothstein with 194 roles.

NEW: Introducing Container Roles. Use the power and flexibility of Ansible playbooks to build

Ansible-galaxy (2)

[background] | ./images/sfeir_fond_big.jpg

Ansible galaxy est le site pour trouver, réutiliser ou partager des rôles Ansible.

<https://galaxy.ansible.com/>

Ansible | Jenkins

[background] | ./images/sfeir_fond_big.jpg

- Déclencher un build à partir d'un événement (appel rest, poll scm)

- Lancer un playbook à partir d'une UI
- Historiser les exécutions
- Intégrer un déploiement Ansible dans un pipeline Jenkins

Jenkins | Configuration d'un job

[background] | ./images/sfeir_fond_big.jpg

Jenkins | Console

[background] | ./images/sfeir_fond_big.jpg

```

Jenkins > jenkins-deploy-ansible > #11
[TASK: [geerlingguy.jenkins | Define jenkins_repo_key_url] *****
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Ensure dependencies are installed.] *****
skipping: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Ensure Jenkins repo is installed.] *****
skipping: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Add Jenkins repo GPG key.] *****
skipping: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Ensure Jenkins is installed.] *****
skipping: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Ensure dependencies are installed.] *****
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Add Jenkins apt repository key.] *****
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Add Jenkins apt repository.] *****
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Ensure Jenkins is installed.] *****
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Ensure Jenkins is started and runs on startup.] ***
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Wait for Jenkins to start up before proceeding.] ***
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Get the jenkins-cli jarfile from the Jenkins server.] ***
changed: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Create Jenkins updates folder.] *****
ok: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Update Jenkins plugin data.] *****
skipping: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Permissions for default.json updates info.] *****
changed: [jenkins.chelonix.org]
[TASK: [geerlingguy.jenkins | Install Jenkins plugins.] *****
changed: [jenkins.chelonix.org] => (item=git)
changed: [jenkins.chelonix.org] => (item=sonar)
changed: [jenkins.chelonix.org] => (item=ssh)
NOTIFIED: [geerlingguy.jenkins | restart jenkins] *****
changed: [jenkins.chelonix.org]
PLAY RECAP *****
jenkins.chelonix.org : ok=19  changed=4    unreachable=0   failed=0
Finished: SUCCESS

```

Ansible | Container

[background] | ./images/sfeir_fond_big.jpg

- Ansible-container (beta)
 - Construit des containers docker à partir de playbook Ansible
 - Déployer ces containers dans le cloud
 - Piloter ces containers

Questions ?

[background] | ./images/sfeir_fond_big.jpg

Crédits

[background] | ./images/sfeir_fond_big.jpg

- [John Lynch](#)
- [Robert Reiz](#)
- [Alexander Schedrov](#)
- [Rayed Alrashed](#)

Merci