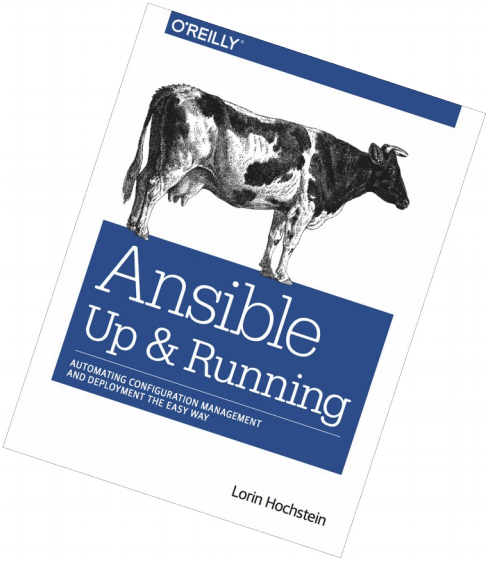
CloudStack & Ansible

SWISS TXT

Who am I

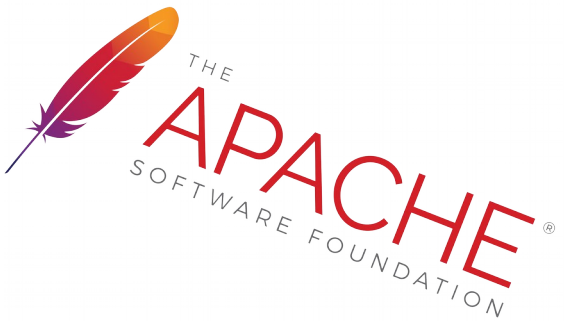
René Moser



- Linux **System Engineer** @ SWISS TXT
- **Ansible** Community **Core Member**
- Apache **CloudStack Committer**
- **Author** of Ansible CloudStack modules
- Co-Author O'Reilly "Ansible Up and Running" 2nd

What is CloudStack?

- **Apache** Software Foundation TLP
- **Java** based **IaaS** cloud software
- Extensive **API**
- Major hypervisors supported

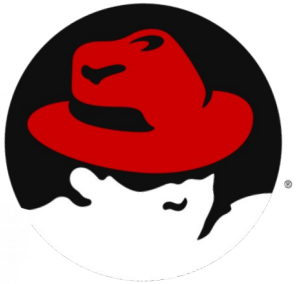


What is Ansible?

- **Command line** tool in Python
- **Simple** but powerful
- Uses **SSH** for connection
- No **agents**
- **Push** based, pull possible

Ansible

- License **GPLv3**
- Started **~2012** (~2400 contributors)
- Division of **RedHat** (2016)



Inventory

```
# file:production
[production:children]
webserver
db

[webservers]
web01.example.com
web02.example.com
web03.example.com

[db]
db01.example.com
db02.example.com
db03.example.com
```

Inventory

- Static as INI-file
- Dynamic as JSON
  - LDAP
  - Database
  - CloudStack

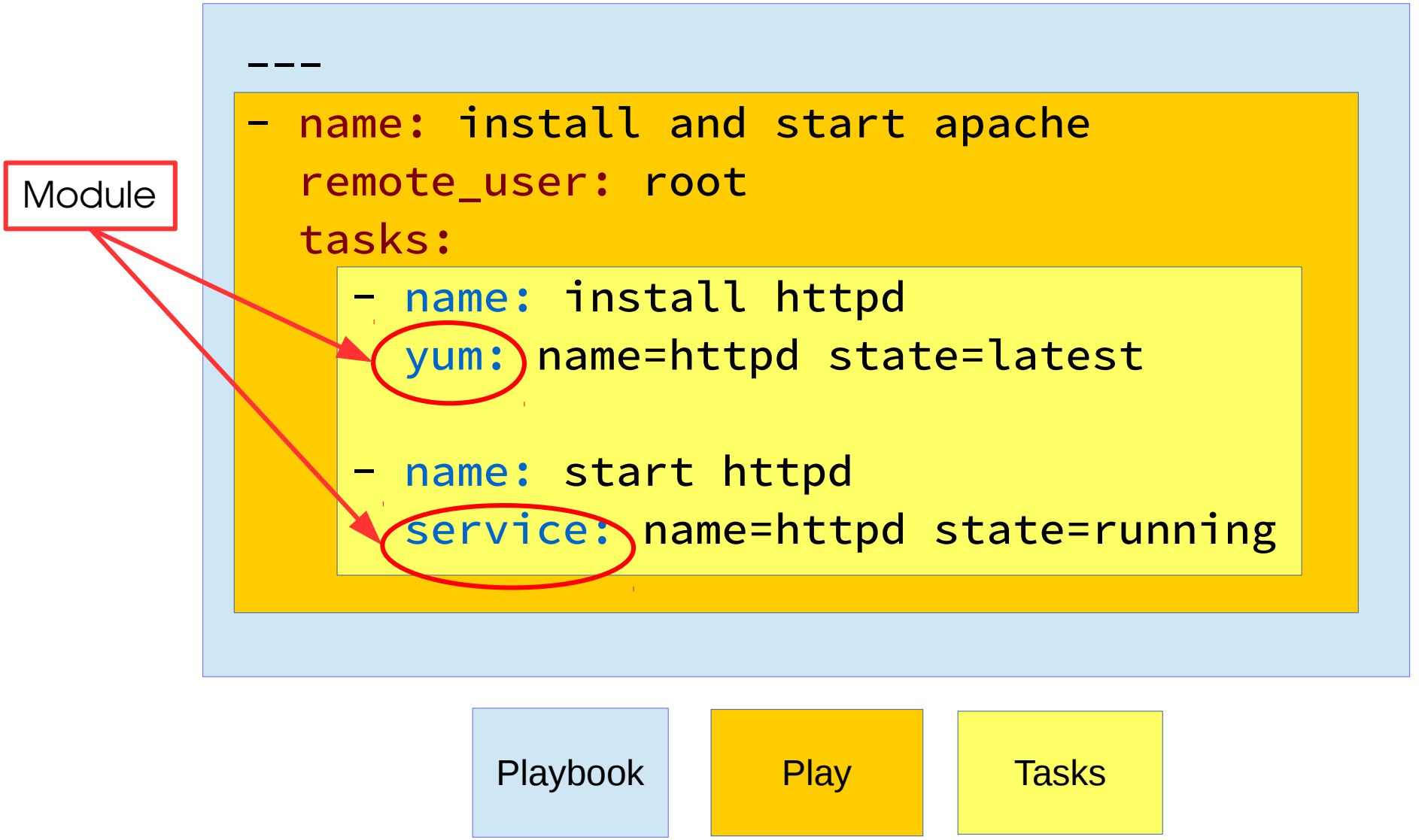
Playbook

```
---
- name: install and start apache
  remote_user: root
  tasks:
    - name: install httpd
      yum: name=httpd state=latest

    - name: start httpd
      service: name=httpd state=running
```

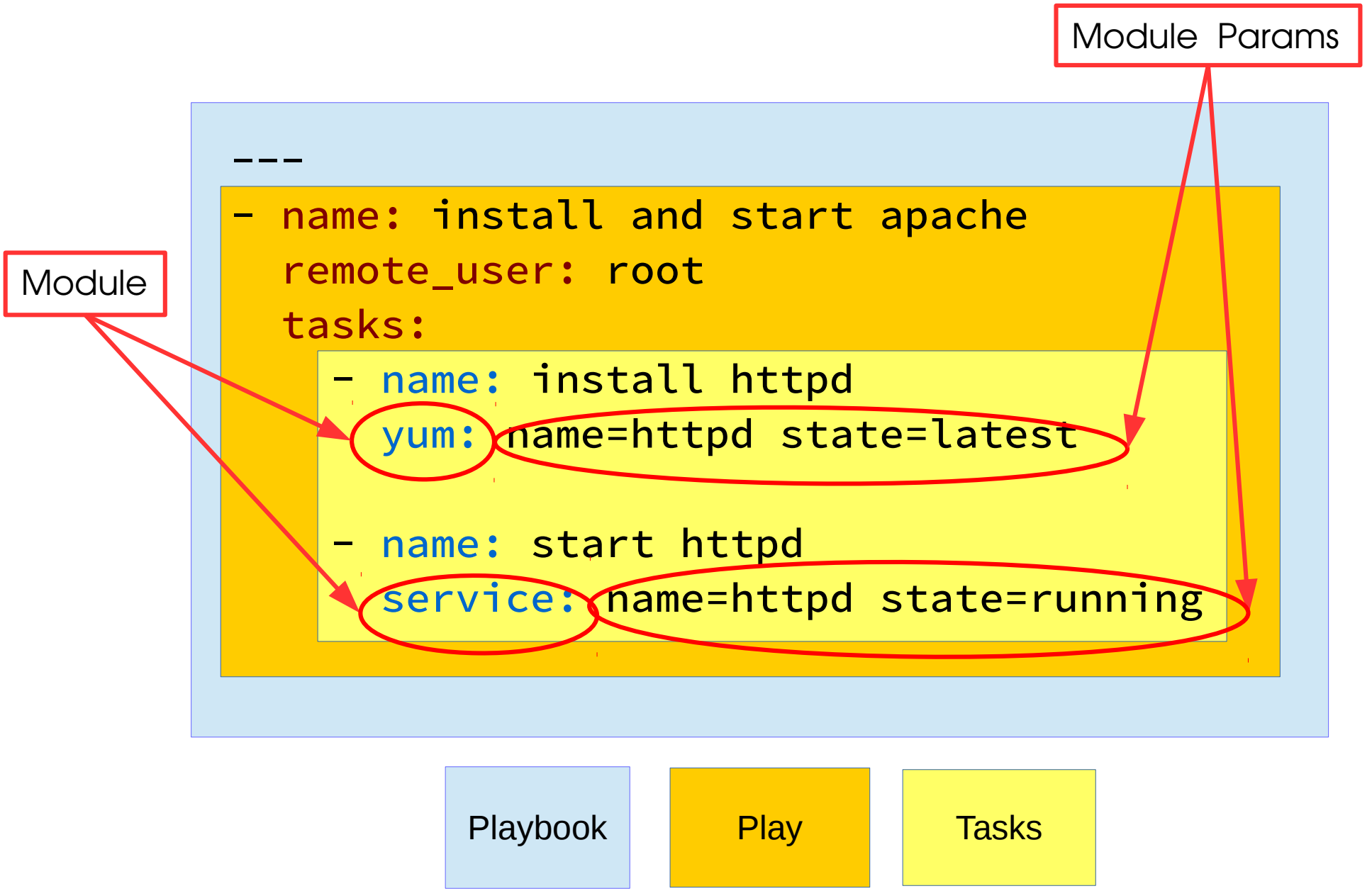
Playbook | Play | Tasks

Playbook



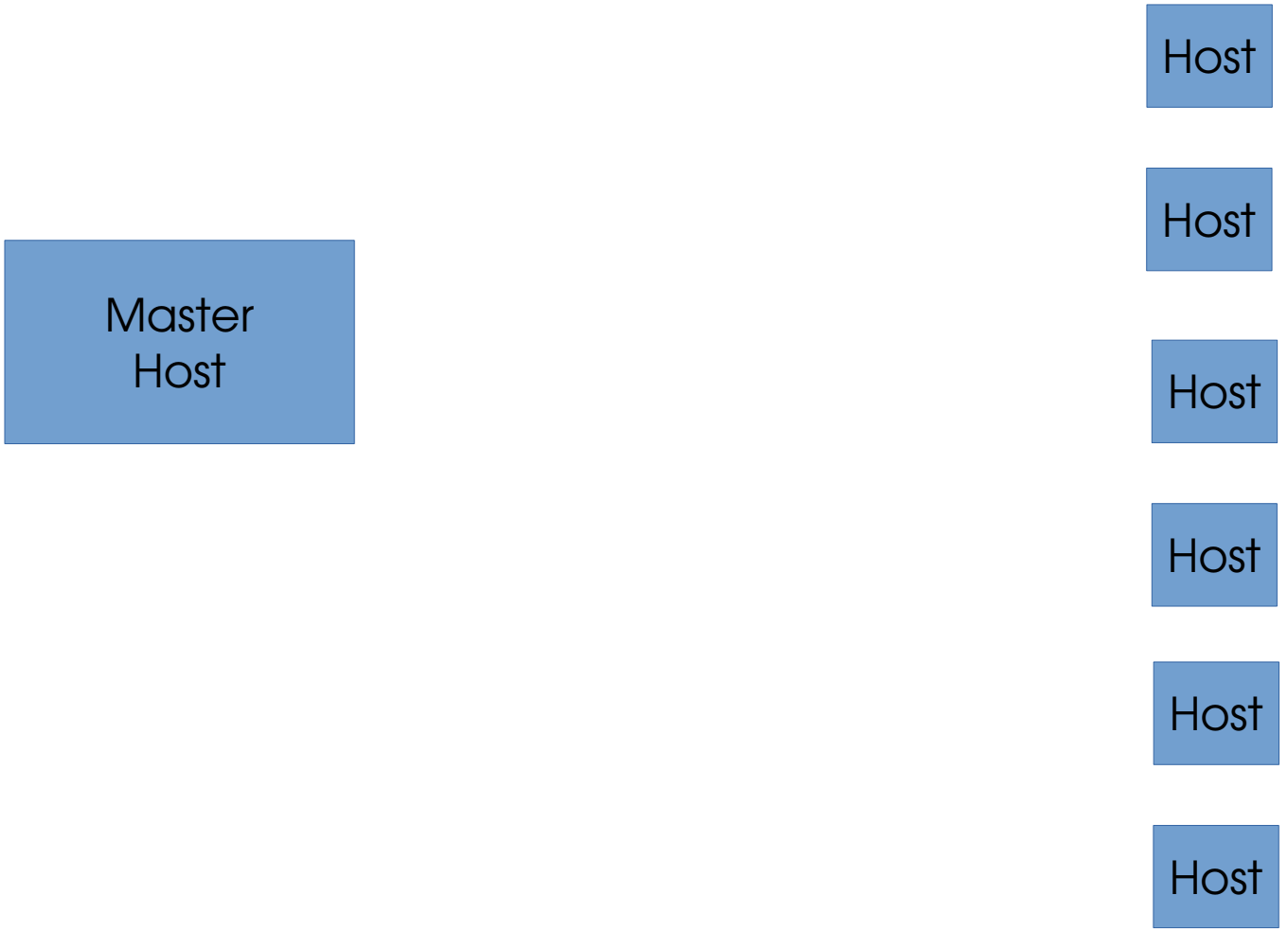
- name: install and start apache
remote_user: root
tasks:
- name: install httpd
yum: name=httpd state=latest
- name: start httpd
service: name=httpd state=running
Module
Playbook
Play
Tasks

Playbook

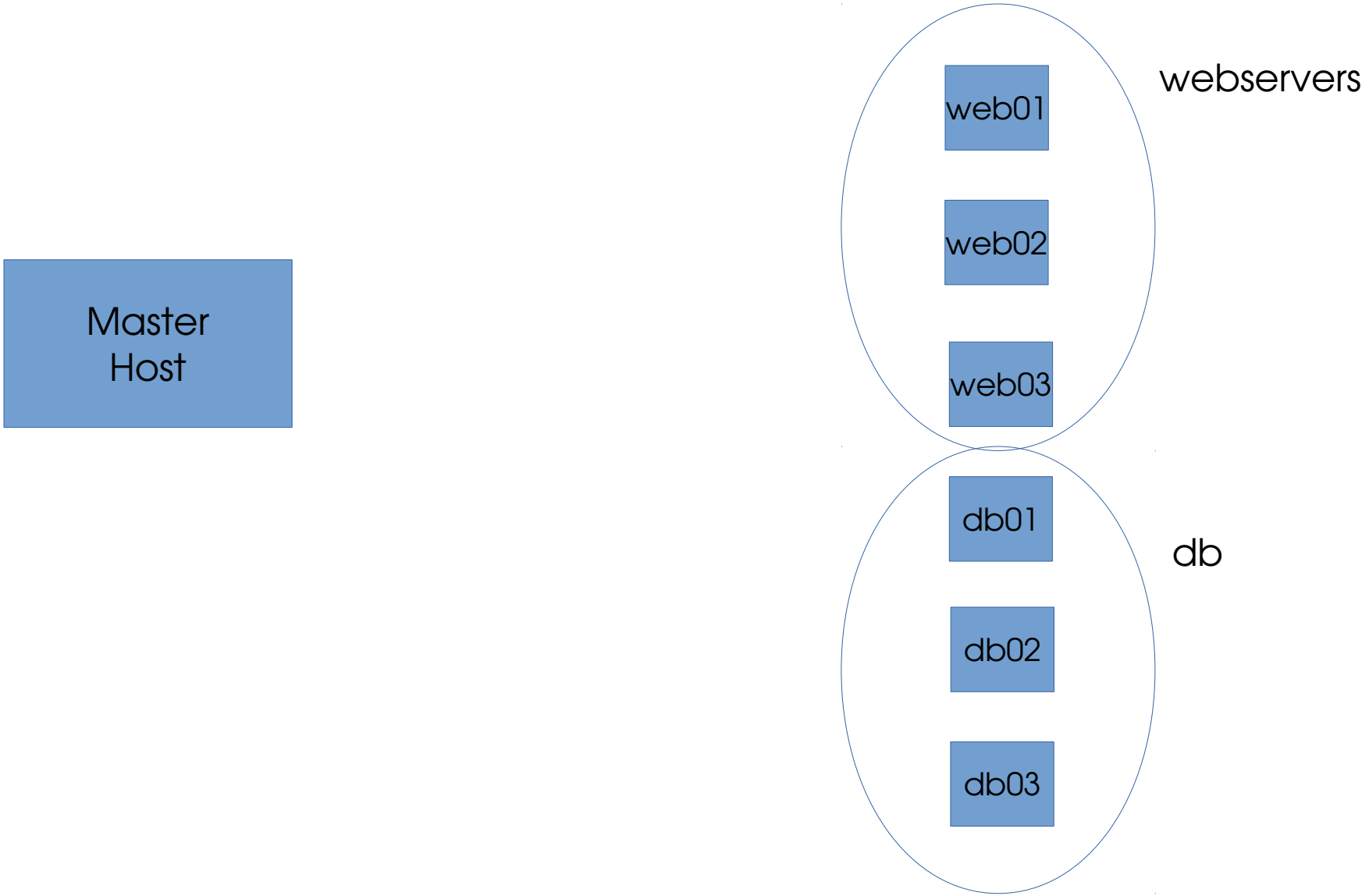

Module Params
Module

- name: install and start apache
remote_user: root
tasks:
- name: install httpd
yum: name=httpd state=latest
- name: start httpd
service: name=httpd state=running
Playbook
Play
Tasks

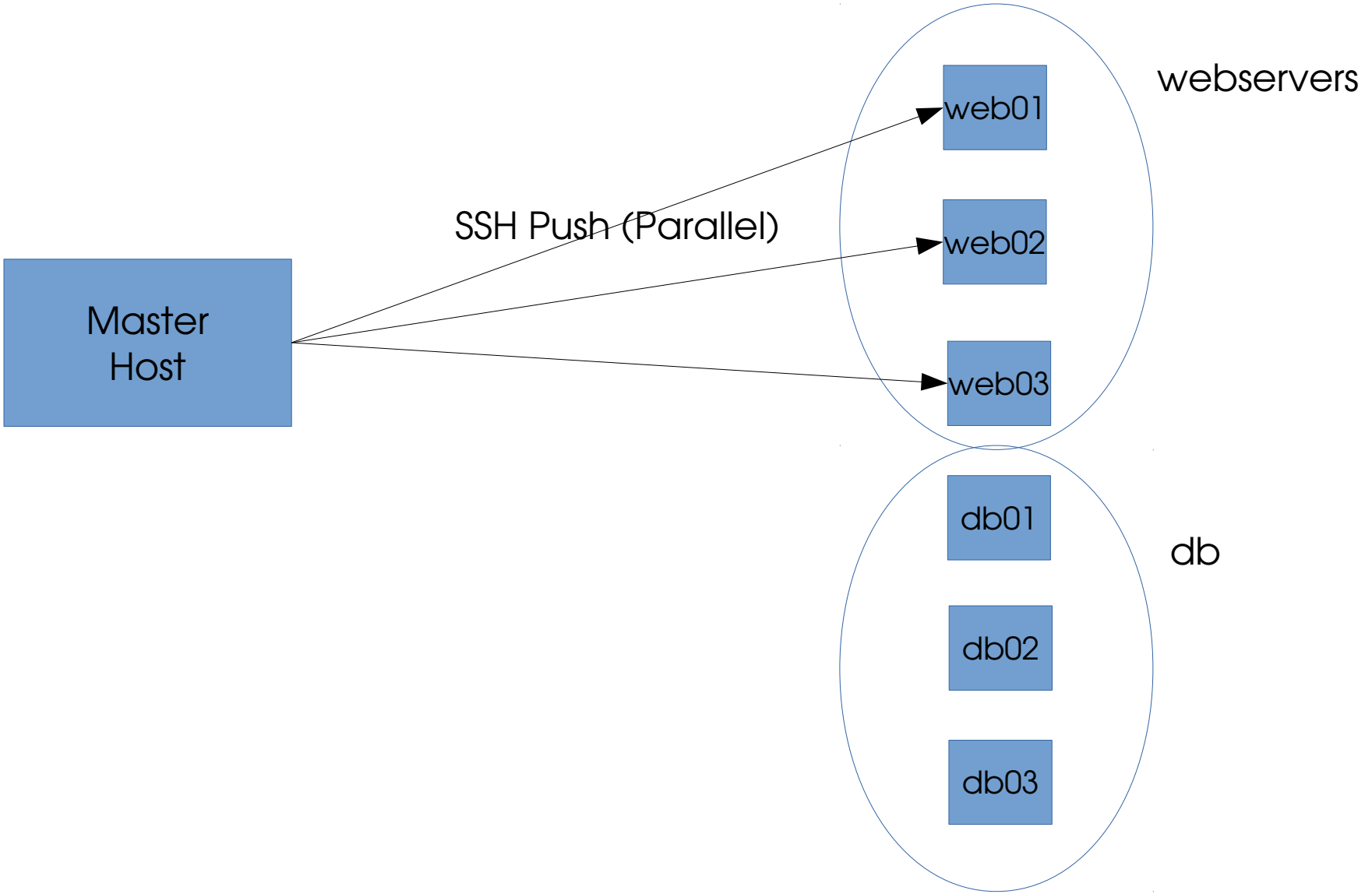
Modus Operandi



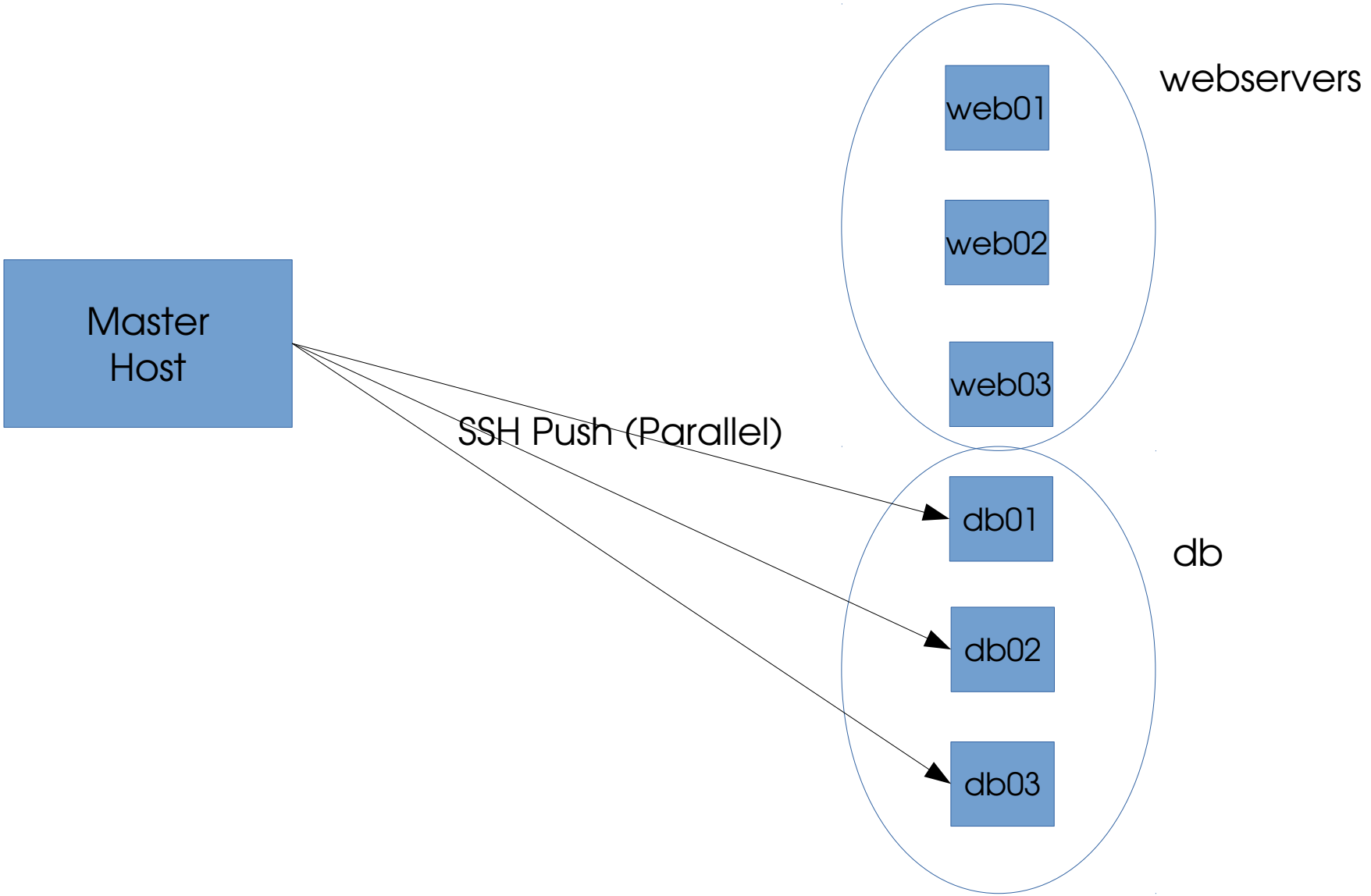
Modus Operandi



Modus Operandi



Modus Operandi

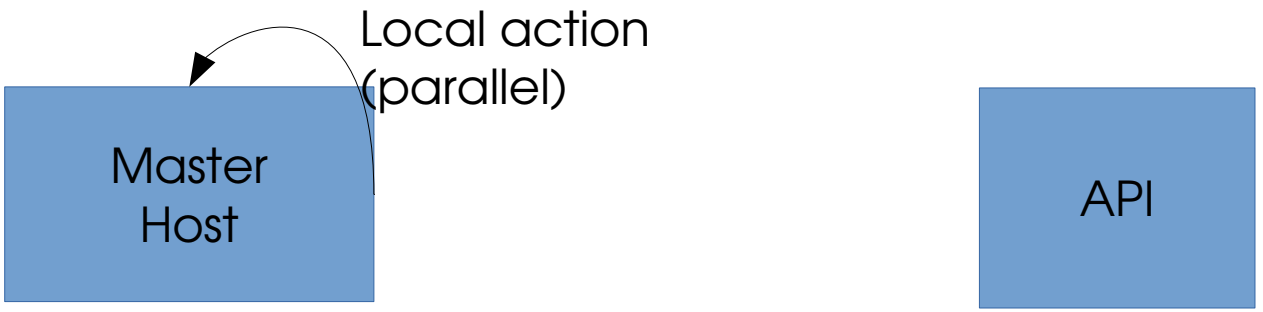


CloudStack Modules

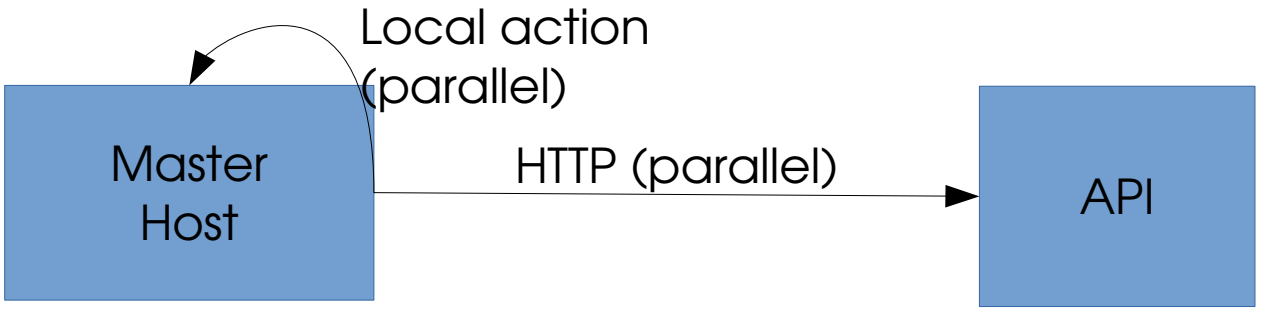
- ~35 CloudStack modules in Ansible 2.2
- Goal: "*Manage every lifecycle of CloudStack by Ansible: install, configure, use, extend, upgrade.*"
- Known users:
  - SWISS TXT
  - ShapeBlue Inc.
  - BIT.group
  - SafeSwissCloud
  - Skippbox

Modus Operandi

Modus Operandi



Modus Operandi



Deploying VMs

cs_instance

```
- name: ensure VM is present
  cs_instance:
    name: “{{ inventory_hostname_short }}”
    template: CentOS-7-x86_64
    project: RTS_PROD
    zone: ZUERICH_IX
    service_offering: 1cpu_1gb
    networks:
      - Server ZRH_RTS_PROD
      - Sync ZRH_RTS_PROD
      - Storage ZRH_RTS_PROD
```

```
$ ansible-playbook cloud.yml
```

cs_instance

```
- name: ensure VM is running
  cs_instance:
    name: “{{ inventory_hostname_short }}”
    template: CentOS-7-x86_64
    project: RTS_PROD
    zone: ZUERICH_IX
    service_offering: 1cpu_1gb
    networks:
      - Server ZRH_RTS_PROD
      - Sync ZRH_RTS_PROD
      - Storage ZRH_RTS_PROD
    state: started
```

```
$ ansible-playbook cloud.yml
```

cs_instance

```
- name: ensure VM is running
  cs_instance:
    name: “{{ inventory_hostname_short }}”
    template: CentOS-7-x86_64
    project: RTS_PROD
    zone: ZUERICH_IX
    service_offering: 2cpu_2gb
    force: “{{ cs_force | default(false) }}”
    networks:
      - Server ZRH_RTS_PROD
      - Sync ZRH_RTS_PROD
      - Storage ZRH_RTS_PROD
    state: started
```

```
$ ansible-playbook cloud.yml -e “cs_force=true”
```

cs_portforward

```
- name: ensure VM is running
  cs_instance:
    name: “{{ inventory_hostname_short }}”
    template: CentOS-7-x86_64
    project: RTS_PROD
    zone: ZUERICH_IX
    service_offering: 2cpu_2gb
    force: true
    networks:
      - Server ZRH_RTS_PROD
      - Sync ZRH_RTS_PROD
      - Storage ZRH_RTS_PROD
    state: started
```

Why CloudStack with Ansible

- Deploy from zero to hero
- Multi-Cloud / Mixed Cloud
- Rolling upgrades

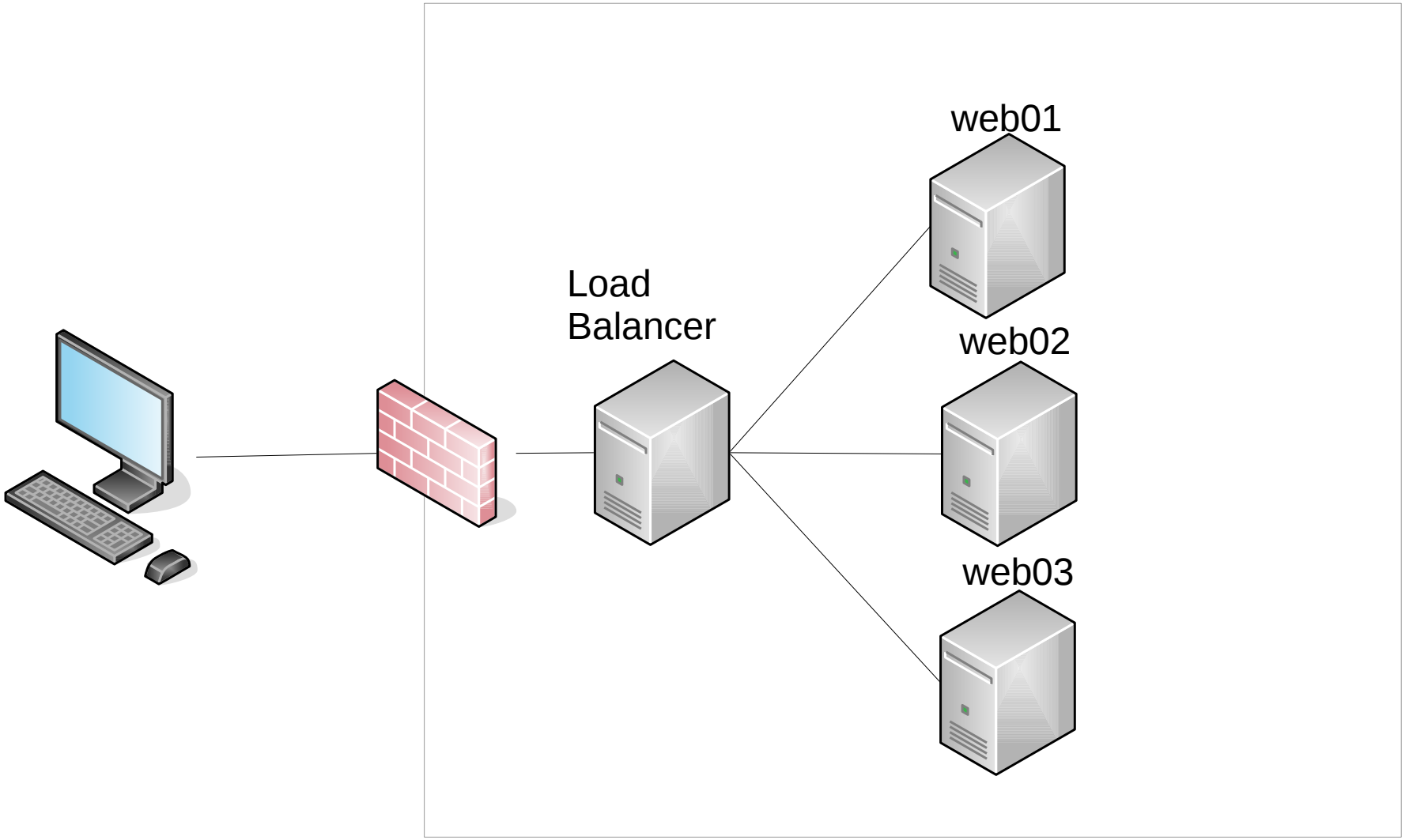
Success Story @ SWISS TXT

- Kaltura Video Platform
- MPC like cloud project setup
- HA (active/active) over 2 zones
- 38 hosts
- Production deployment within 3 weeks

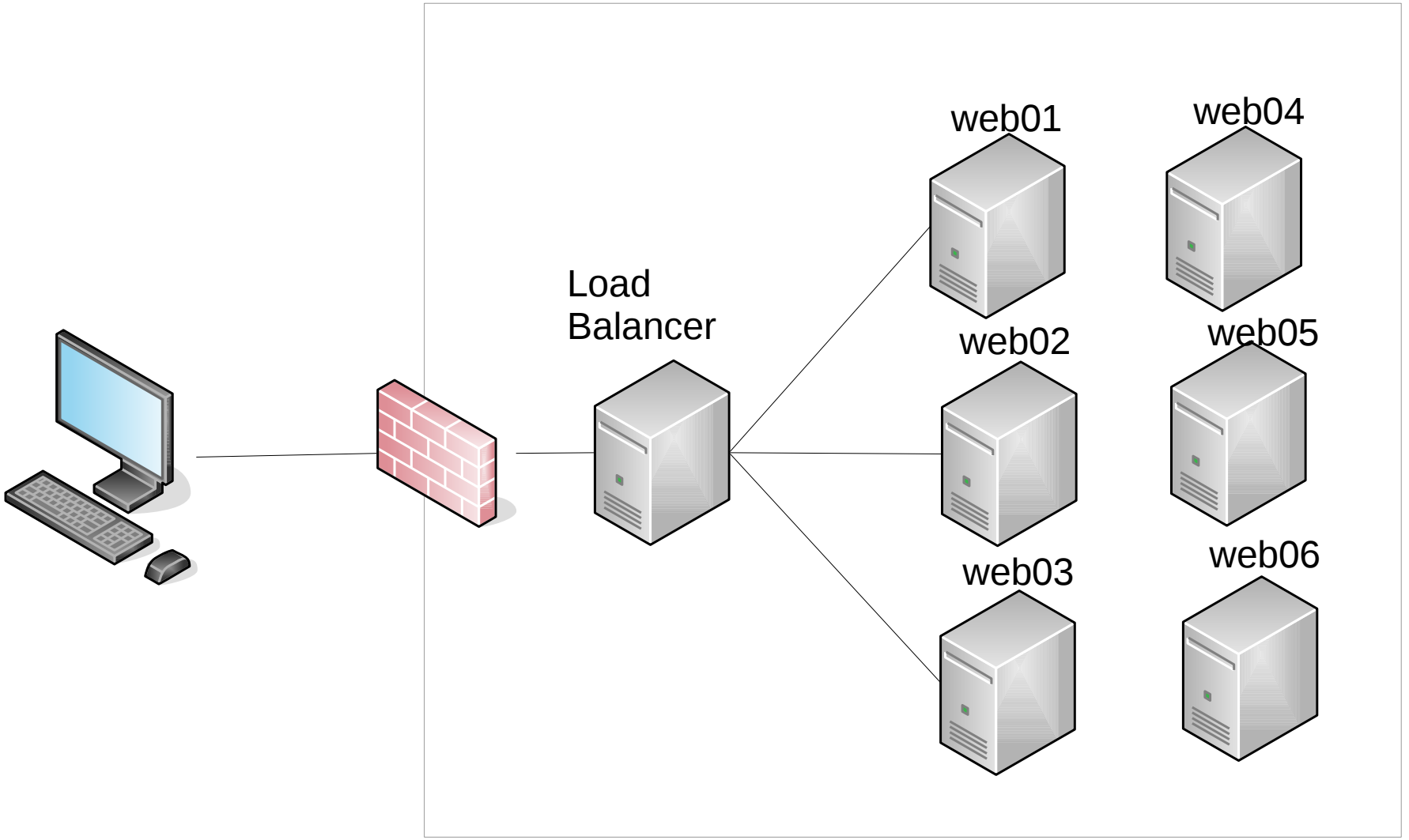
Demo Rolling Upgrade

1. Create new VMs
2. Deploy updated app
3. Run smoke tests
4. Replace LB Members to new VMs
5. Stop old VMs

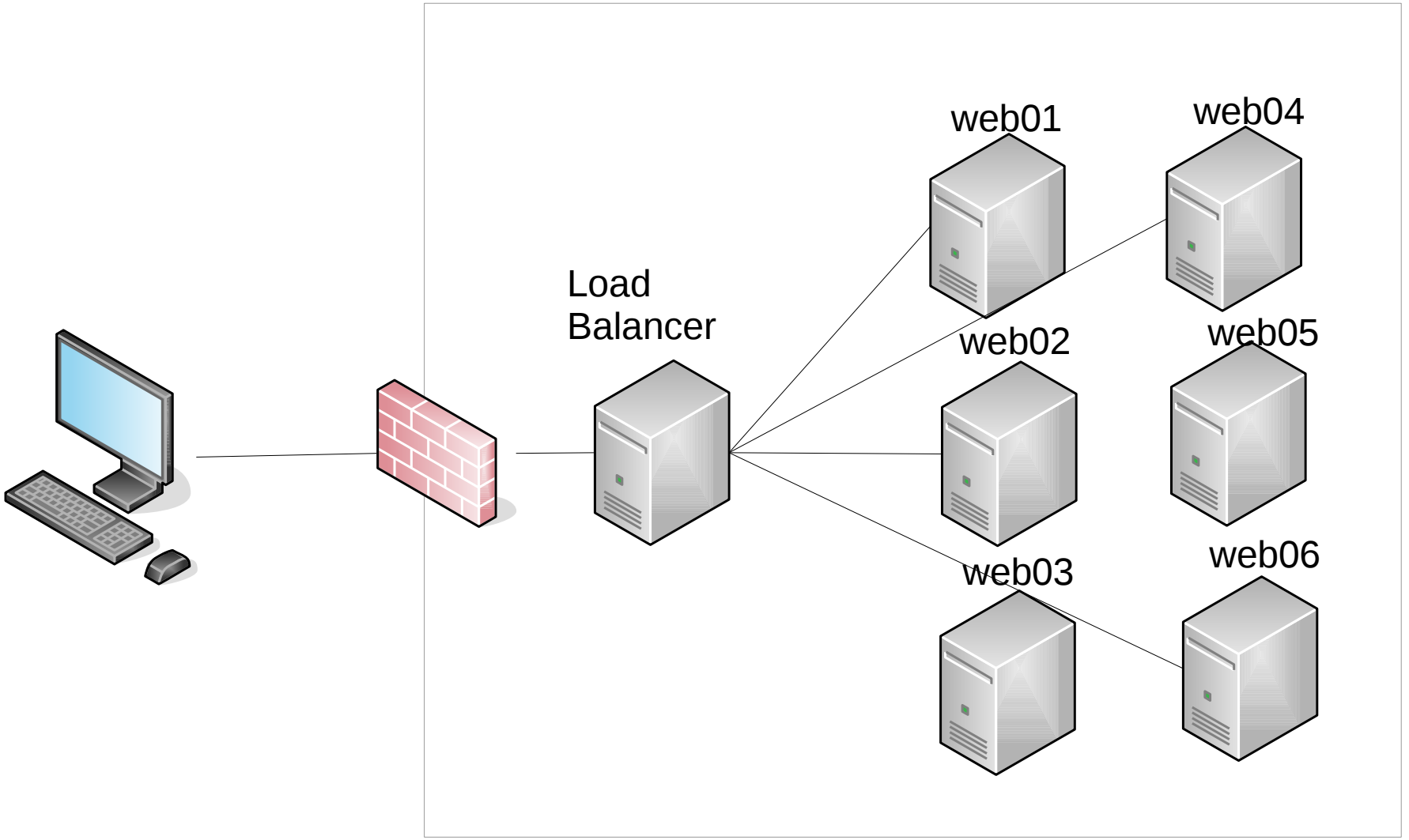
Existing Infra



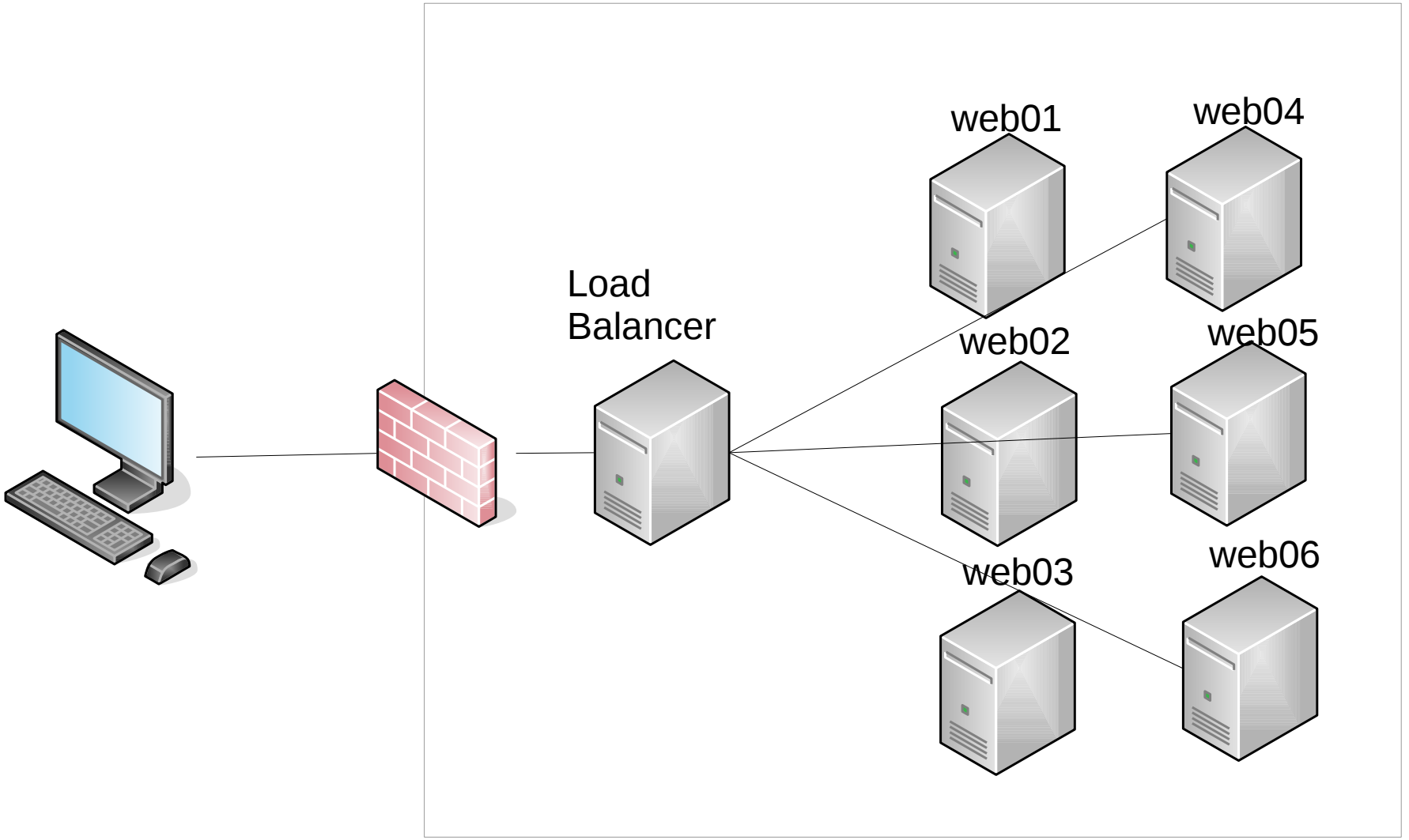
Deploy new VMs



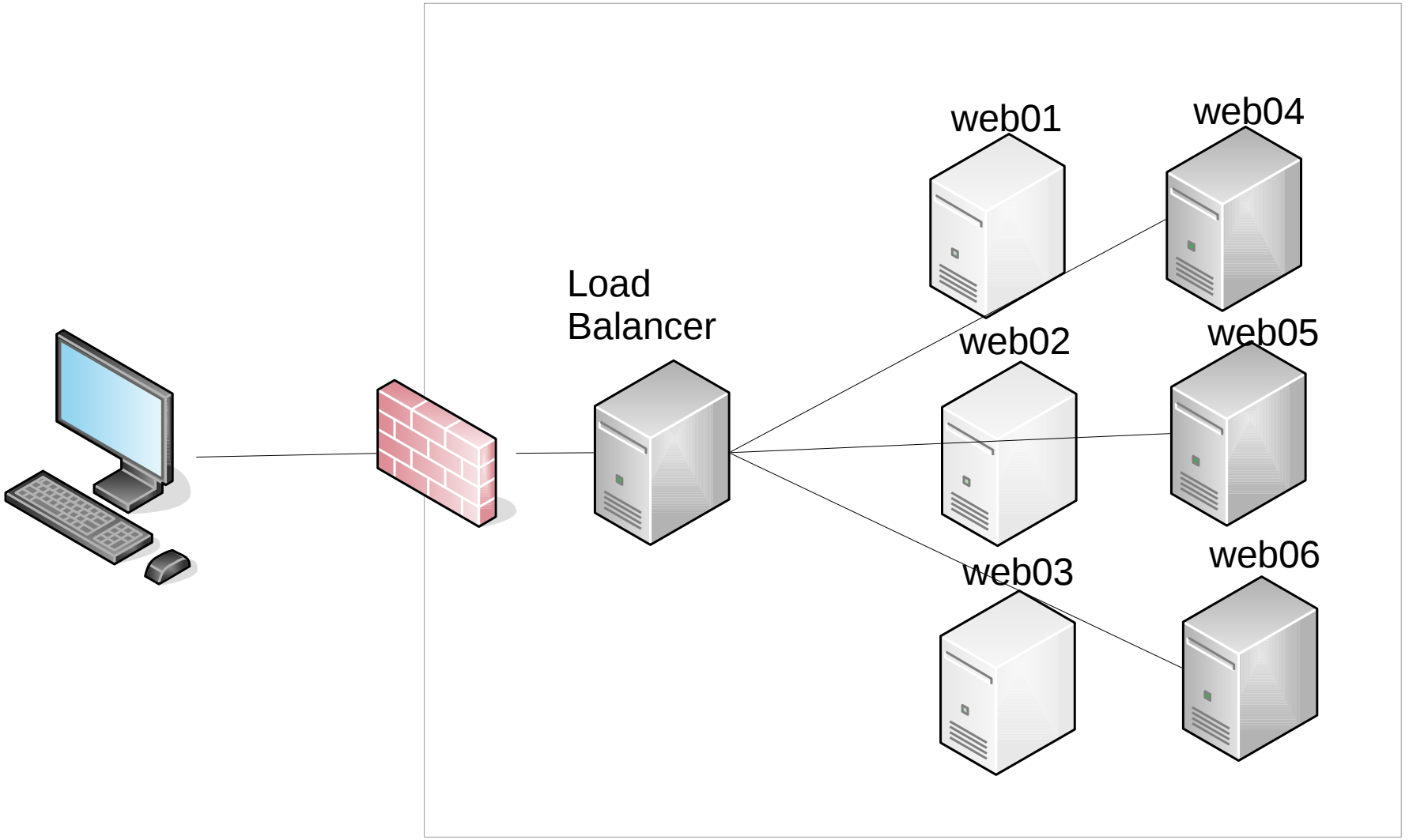
Replacing LB Members



Replaced LB Members



Stop old VMs



Demo

Questions?

- Ansible CloudStack Guide
  http://docs.ansible.com/ansible/guide_cloudstack.html
- Modules Docs:
  http://docs.ansible.com/ansible/list_of_cloud_modules.html#cloudstack
- Generic Cloud Infra Ansible Role
  https://github.com/swisstxt/ansible-role-cloud-infra
- Demo Playbooks and slides
  https://github.com/swisstxt/mpc-tech-2017

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