



GOPS2017
Beijing



GOPS

全球运维大会

2017



指导单位：



数据中心联盟
Data Center Alliance



开放运维联盟
OOPSA Open OPS Alliance

主办单位：



高效运维社区
GreatOps Community



DevOps时代



CIO时代
CIO & I ASPI

大会时间：7月28-29日

大会地点：北京朝阳悠唐皇冠假日酒店



让配置“飞”起来

陈尔冬 链家网技术保障部技术总监



目录

1 | 为什么要“配置管理”

2 | 配管工具与Ansible

3 | Beyond the Ansible

4 | 新流派：动态配置管理

关于我



新浪私有云

- 深度参与微博从0至上市

华为公有云

链家网SRE

与其寻找银弹，不如
用好手边的平底锅。



从Unix哲学聊起



1. 机制与策略分离
 - 配置出现的必然
2. 万物皆文件
 - 配置文件的出现
3. 其他原则
 - 组合原则
 - 吝啬原则
 - 生成原则
 - 扩展原则





Application

Deployment

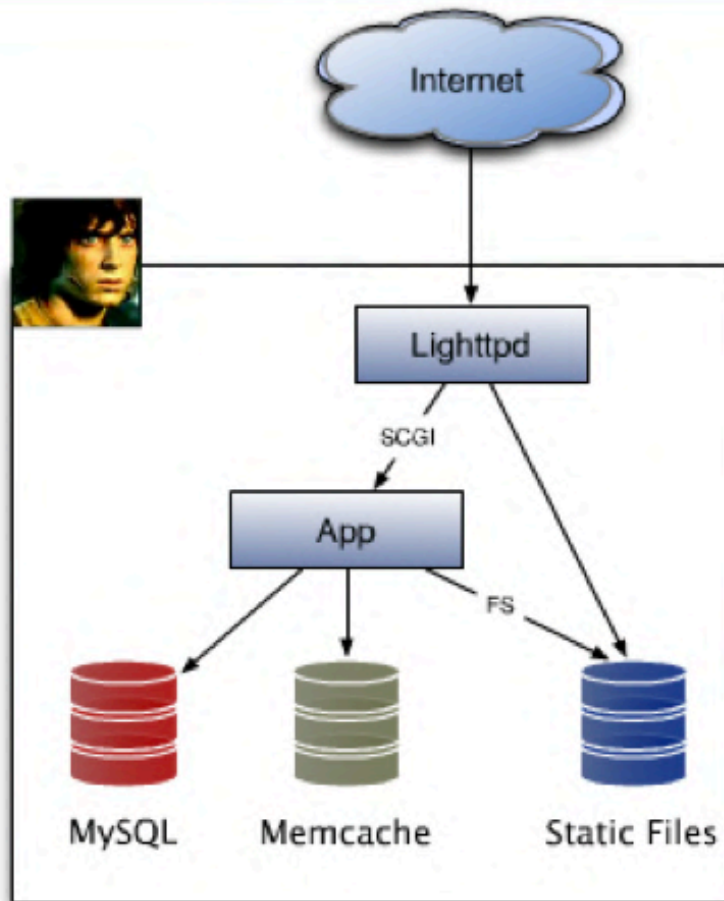
MiddleWare

Configuration
Management

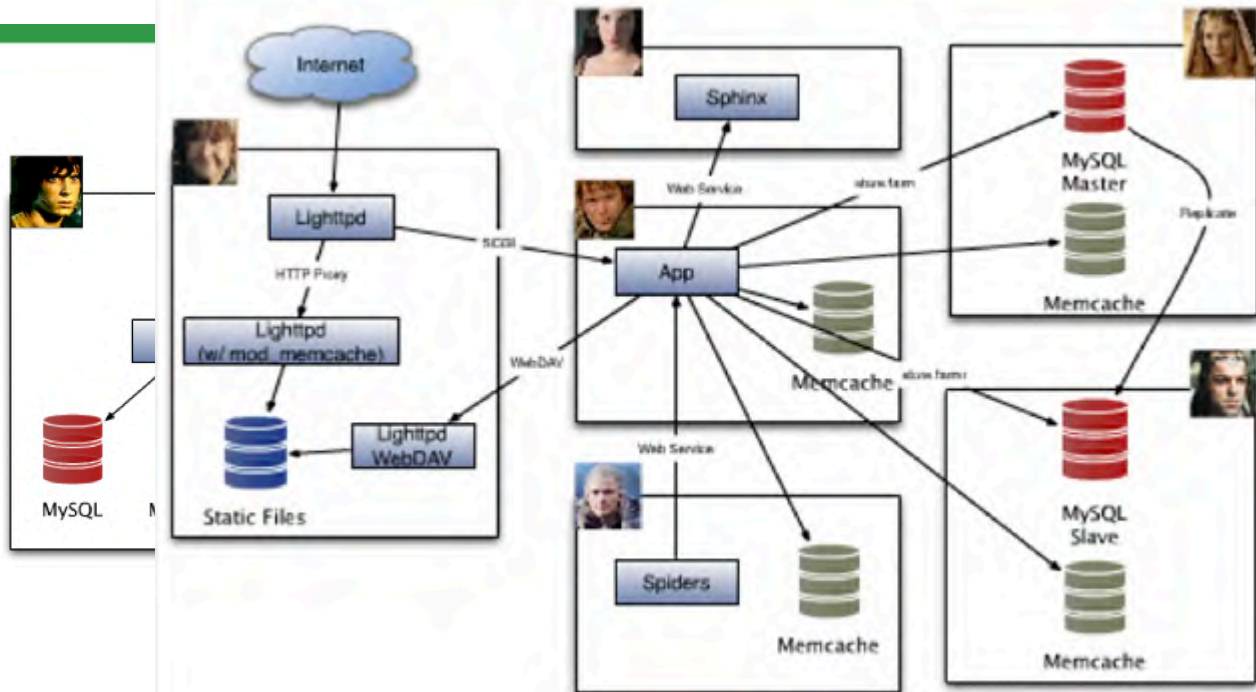
Linux

Provisioning





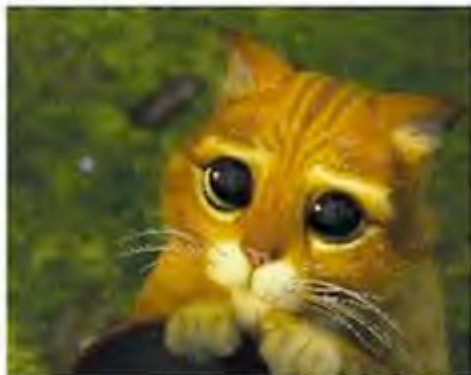
豆瓣 [douban](https://www.douban.com/)







Service Model



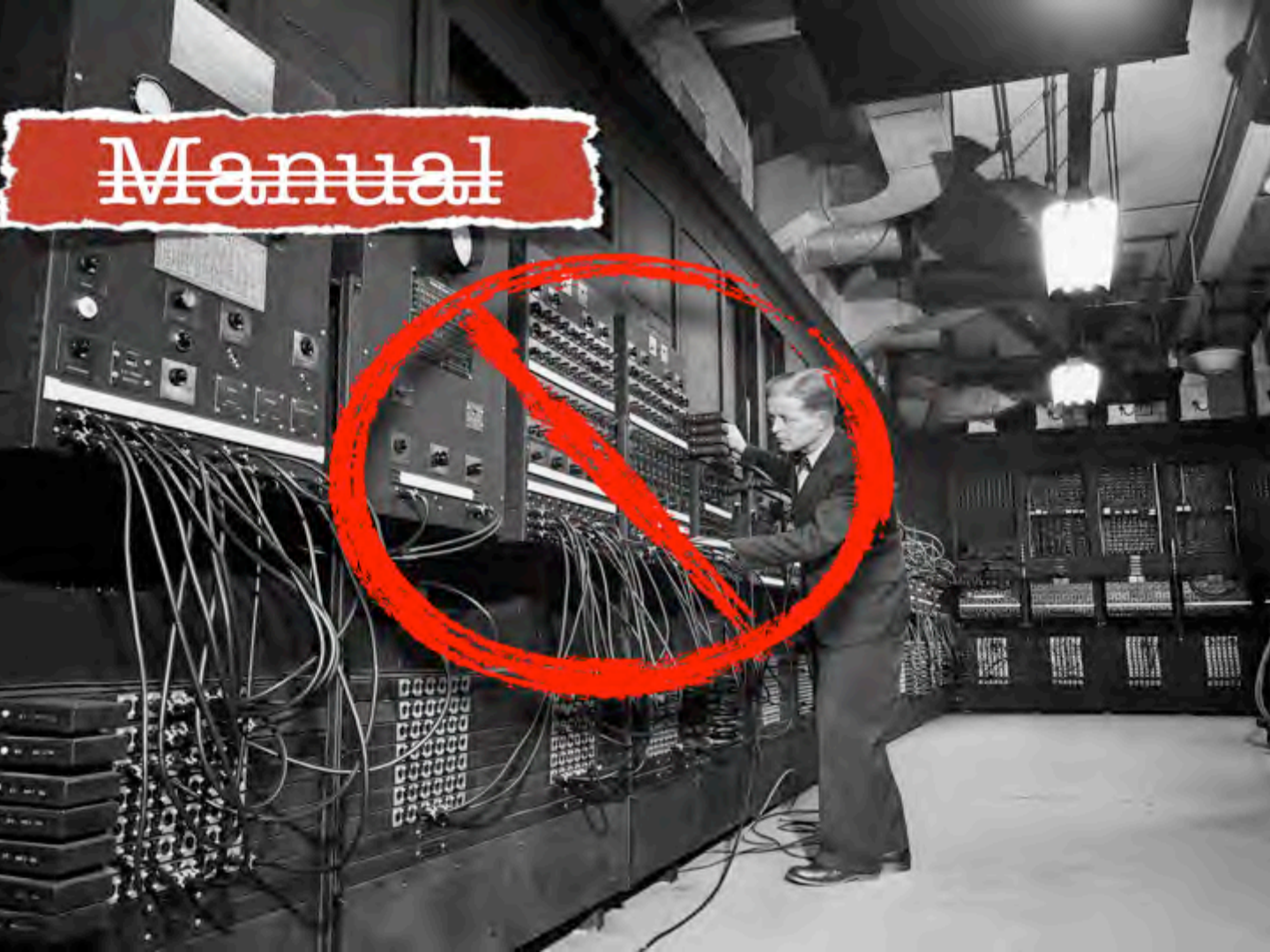
- Pets are given names like `pussinboots.cern.ch`
- They are unique, lovingly hand raised and cared for
- When they get ill, you nurse them back to health



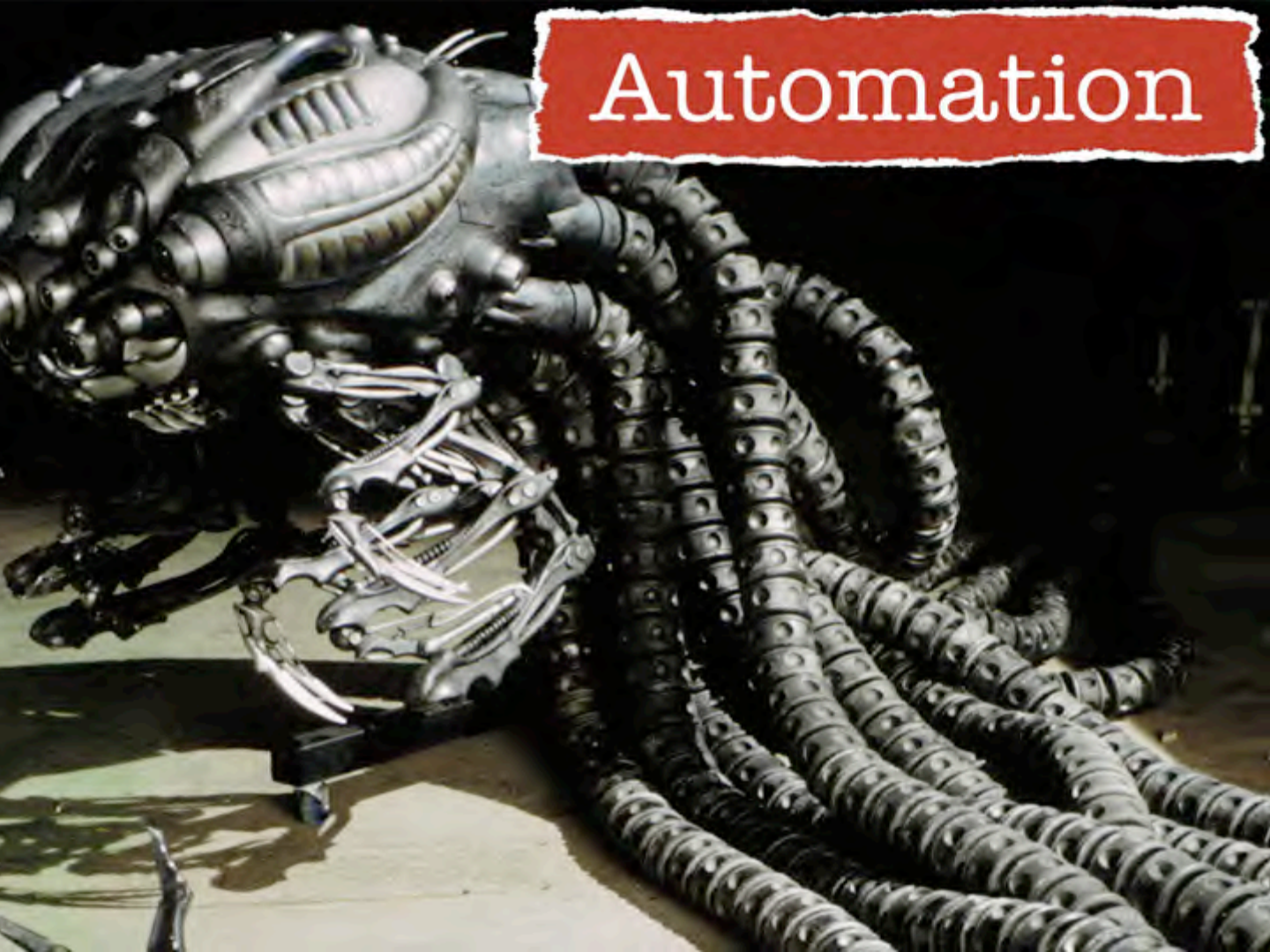
- Cattle are given numbers like `vm0042.cern.ch`
- They are almost identical to other cattle
- When they get ill, you get another one

• Future application architectures should use Cattle but Pets with strong configuration management are viable and still needed

~~Manual~~



Automation





State of DevOps Report中的数据显示，企业通过应用配管软件，每年都在部署、变更以及故障恢复等领域产生积极效果。

Table 1: Changes in IT performance of high performers, 2016 to 2017

IT performance metrics	2016	2017
Deployment frequency	200x more frequent	46x more frequent
Lead time for changes	2,555x faster	440x faster
Mean time to recover (MTTR)	24x faster	96x faster
Change failure rate	3x lower (1/3 as likely)	5x lower (1/5 as likely)

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配管工具



1. 配管工具特性

- 自动化执行
- 基础设施即代码
- 模版引擎



SALTSTACK

2. 配管工具选择

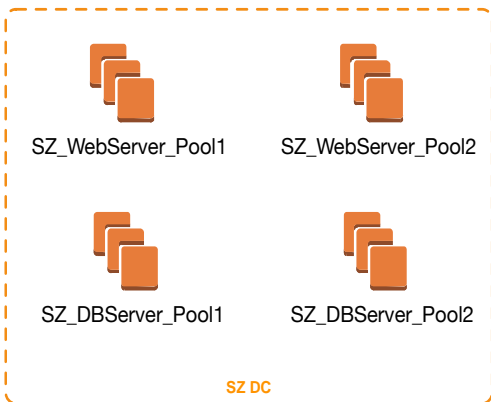
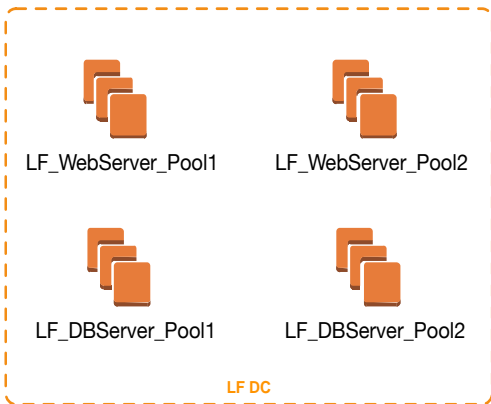
- 基于状态管理
- 抽象



ANSIBLE



“公牛” 理论实践



Groups:

```
[LF_WebServer]           [SZ_WebServer]
LF_WebServer_Pool1     SZ_WebServer_Pool1
LF_WebServer_Pool2     SZ_WebServer_Pool2
```

```
[LF_DBServer]           [SZ_DBServer]
LF_DBServer_Pool1     SZ_DBServer_Pool1
LF_DBServer_Pool2     SZ_DBServer_Pool2
```

```
[WebServer_Pool1]      [WebServer_Pool2]
LF_WebServer_Pool1    LF_WebServer_Pool2
SZ_WebServer_Pool1    SZ_WebServer_Pool2
```

```
[WebServer]            [DBServer]
LF_WebServer           LF_DBServer
SZ_WebServer           SZ_DBServer
```

```
[LF]                   [SZ]
LF_WebServer           SZ_WebServer
LF_DBServer            SZ_DBServer
```

```
Group:LF
User:LF_Admin
```

```
Group:SZ_WebServer
CronTab:Logrotate
```

```
Group:WebServer
Package:Apache
```

```
Group:WebServer_Pool1
Package:App1
```

```
Group:WebServer_Pool2
Package:App2
```



为什么需要模版引擎？

httpd-vhost.conf_tmpl

```
...  
SetEnv SINASRV_ZONE_IDC @@XD@@  
SetEnv SINASRV_ZONE_ISP @@CNC@@  
SetEnv SINASRV_ZONE_ID @@010201@@  
...
```

vhost_config.pl

```
...  
%idc_rule = (  
    zjm => {  
        SINASRV_ZONE_IDC => "ZJM",  
        SINASRV_ZONE_ISP => "CNC",  
        SINASRV_ZONE_ID => "010101",  
    }  
)  
...  
elsif ($line =~ m!^\s*SetEnv\s+SINASRV_ZONE_IDC.+!) {  
    push @vhost_configfile, "SetEnv SINASRV_ZONE_IDC ". $idc_rule{$idc}{SINASRV_ZONE_IDC};  
    next;  
} elsif ($line =~ m!^\s*SetEnv\s+SINASRV_ZONE_ISP.+!) {  
    push @vhost_configfile, "SetEnv SINASRV_ZONE_ISP ". $idc_rule{$idc}{SINASRV_ZONE_ISP};  
    next;  
} elsif ($line =~ m!^\s*SetEnv\s+SINASRV_ZONE_ID.+!) {  
    push @vhost_configfile, "SetEnv SINASRV_ZONE_ID ". $idc_rule{$idc}{SINASRV_ZONE_ID};  
    next;  
}  
)  
...
```



FE Node

/etc/httpd-vhost.conf

Ansible Mgmt Node

laptop
desktop
server

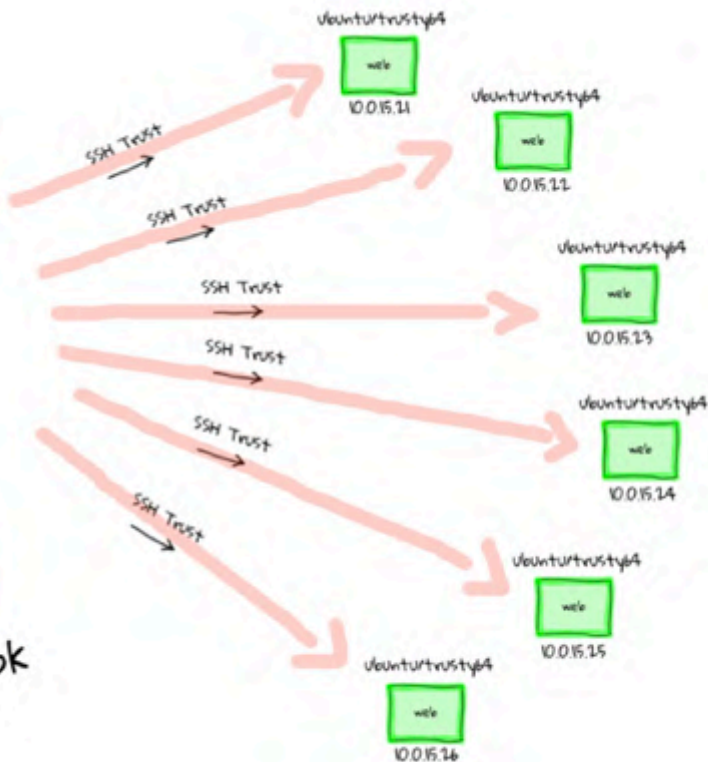


Host
Inventory

10.0.15.21
10.0.15.22
10.0.15.23
....



Playbook
web





我为什么选择Ansible

1. 进入门槛低
 - Agentless
 - 易于复用旧脚本
2. 简单，易作为运维系统一个模块
 - 动态Inventory
 - orchestration



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Ansible Mgmt Node

laptop
desktop
server

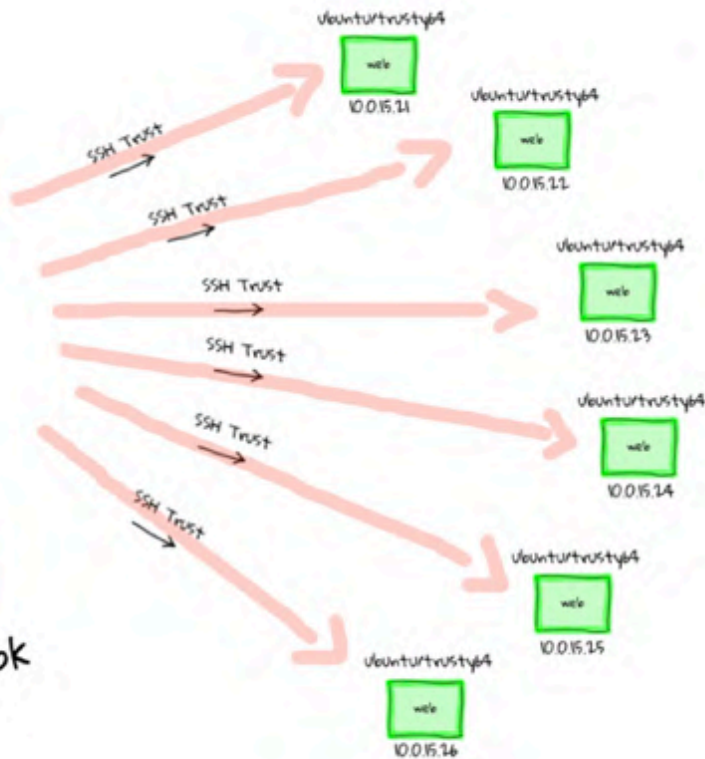


Host
Inventory

10.0.15.21
10.0.15.22
10.0.15.23
....



Playbook
web



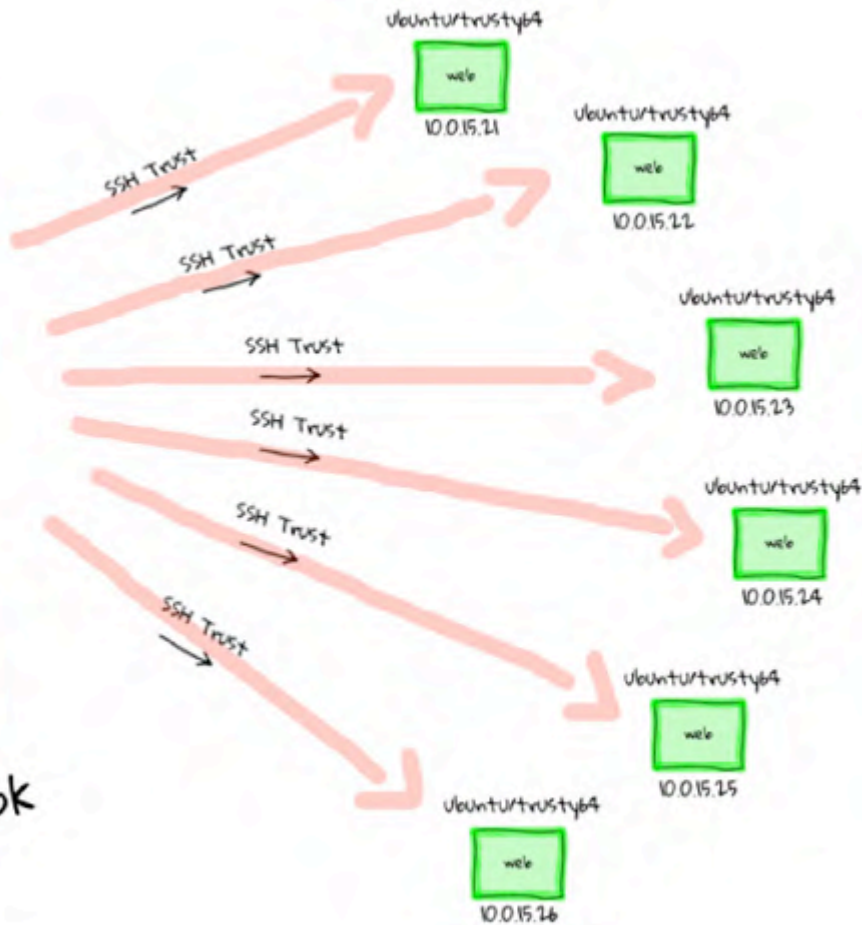
Ansible Mgmt Node



CMDB

Playbook
web

10.0.15.21
10.0.15.22
10.0.15.23
....



Ansible Mgmt
Node

laptop
desktop
server

Ansible pull
like Agent

ubuntu trusty64
web
10.0.15.21

ubuntu trusty64
web
10.0.15.22

ubuntu trusty64
web
10.0.15.23

ubuntu trusty64
web
10.0.15.24

ubuntu trusty64
web
10.0.15.25

ubuntu trusty64
web
10.0.15.26

SSH Trust

SSH Trust

SSH Trust

CMDB

Playbook
web

10.0.15.21
10.0.15.22
10.0.15.23
....



Ansible Mgmt
Node

laptop
desktop
server

Ansible pull
like Agent

CMDB

10.0.15.21
10.0.15.22
10.0.15.23
....

Role-based
playbook
generator




Operation as a Service



Workflow



Administration

172.16.0.0
172.16.1.0
172.16.2.0

Naming



Orchestration


Command-line tools



Load Balancing



Reporting



Asset Inventory



A.A.A.



Database



Dashboards



Configuration Management



Caching



Logging

More ...


Mobile App



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➔ 4 新流派：动态配置管理

应用的配置正在发生变化



1. 应用系统追求更高的灵活性
 - ZooKeeper、etcd等系统诞生
2. 命名服务和配置中心孕育而生
 - 微服务架构





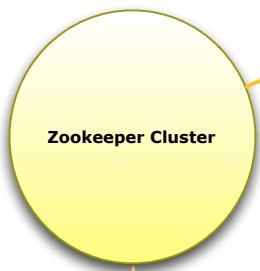
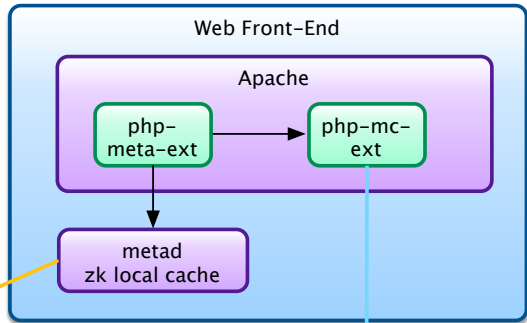
Legend

Server

Process

Cluster

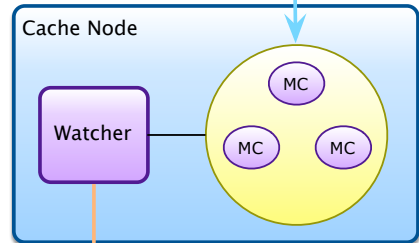
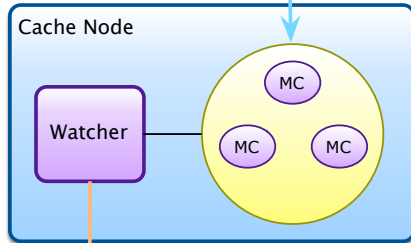
Extension



Updating Notification

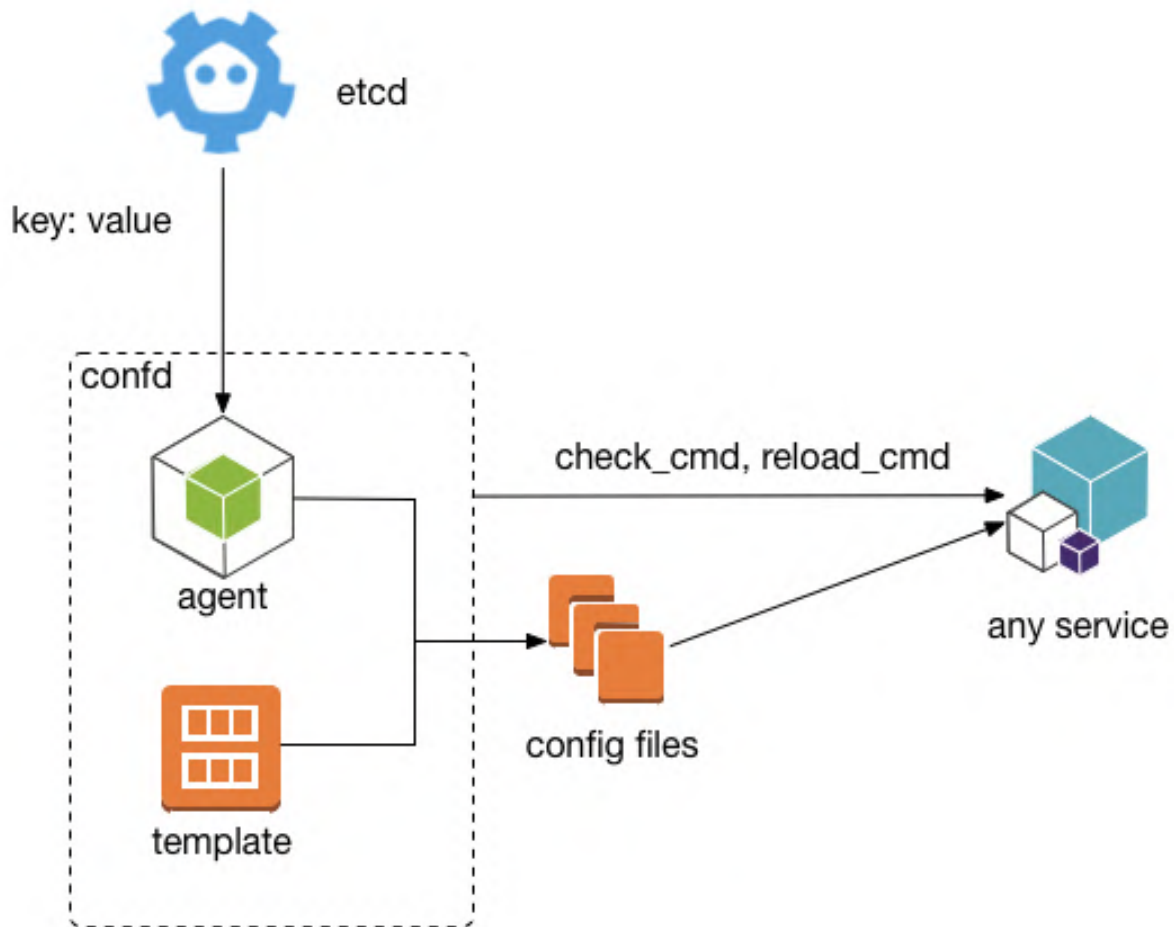
Memcached Command

Node Register & Heartbeat





为什么不把配置扩展呢？



```
[template]
src = "nginx.conf.tmp"
dest = "/etc/nginx.conf"
keys = [
  "/nginx",
]
check_cmd = "/usr/sbin/nginx -t"
reload_cmd = "/usr/sbin/nginx -s
reload"
```

confd



etcd



```
etcdctl set /nginx/upstream/name testa
etcdctl set /nginx/upstream/server/srv1 "192.168.0.2:80"
etcdctl set /nginx/upstream/server/srv2 "192.168.0.3:80"
etcdctl set /nginx/http/server_name www.test.com
```

```
upstream {{getv "/nginx/upstream/name"}} {
  {{range getvs "/nginx/upstream/server/*"}}
  server {{.}};
  {{end}}
}

server {
  listen 80;
  server_name {{getv "/nginx/http/server_name"}};

  location / {
    proxy_pass http://{{getv "/nginx/upstream/
name"}};
  }
}
```

template



```
upstream testa {
  server 192.168.0.2:80;
  server 192.168.0.3:80;
}

server {
  listen 80;
  server_name www.test.com;

  location / {
    proxy_pass http://testa;
  }
}
```

Nginx Configuration



你真的需要动态配置吗？



总结



高效运维社区
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会议

- 8月18日 DevOpsDays 上海
- 全年 DevOps China 巡回沙龙
- 11月17日 DevOps金融上海

培训

- EXIN DevOps Master 认证培训
- DevOps 企业内训
- DevOps 公开课
- 互联网运维培训

咨询

- 企业DevOps 实践咨询
- 企业运维咨询



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