# Linux系统架构线上项目配置及监控

**服务器IP地址规划如下:**

|  |  |  |
| --- | --- | --- |
| 序号 | 服务器主机名 | ip地址 |
| 1 | Mysql23 | 192.168.4.23 |
| 2 | Mysql24 | 192.168.4.24 |
| 3 | maxscale | 192.168.4.25 |
| 4 | Haproxy99 | 192.168.4.99 |
| 5 | Haproxy89 | 192.168.4.89 |
| 6 | Nfs25 | 192.168.4.25 |
| 7 | web33 | 192.168.4.33 |
| 8 | Web34 | 192.168.4.34 |
| 9 | Web35 | 192.168.4.35 |
| 10 | web36 | 192.168.4.36 |
| 11 | Haproxy27 | 192.168.4.27 |
| 12 | Haproxy28 | 192.168.4.28 |
| 13 | Haproxy29 | 192.168.4.29 |
| 14 | Zabbix26 | 192.168.4.26 |
| 15 | Zabbix55 | 192.168.4.55 |
| 16 | Haproxy56 | 192.168.4.26 |
| 17 | Haproxy57 | 192.168.4.57 |
|  |  |  |

**服务器环境与应用软件版本介绍**

服务器环境

[root@centos ~]# cat /etc/redhat-release

CentOS Linux release 7.5.1804 (Core)

[root@centos ~]# uname -r

3.10.0-862.el7.x86\_64

**应用软件版本**

**mysql-5.7.17.tar nginx-1.12.2.tar.gz zabbix-3.4.4.tar.gz**

**服务器逻辑架构图**

**配置逻辑卷**

步骤一：磁盘分区(2台数据库服务器都配置)

以mysql23为例

1）创建分区，每块盘分1个区即可

[root@mysql23 ~]#fdisk /dev/vdb

欢迎使用 fdisk (util-linux 2.23.2)。

更改将停留在内存中，直到您决定将更改写入磁盘。

使用写入命令前请三思。

Device does not contain a recognized partition table

使用磁盘标识符 0xaca3a0ac 创建新的 DOS 磁盘标签。

命令(输入 m 获取帮助)：n

Partition type:

p primary (0 primary, 0 extended, 4 free)

e extended

Select (default p):

Using default response p

分区号 (1-4，默认 1)：

起始 扇区 (2048-41943039，默认为 2048)：

将使用默认值 2048

Last 扇区, +扇区 or +size{K,M,G} (2048-41943039，默认为 41943039)：

将使用默认值 41943039

分区 1 已设置为 Linux 类型，大小设为 20 GiB

命令(输入 m 获取帮助)：t

已选择分区 1

Hex 代码(输入 L 列出所有代码)：8e

已将分区“Linux”的类型更改为“Linux LVM”

命令(输入 m 获取帮助)：w

The partition table has been altered!

Calling ioctl() to re-read partition table.

正在同步磁盘。

[root@mysql23 ~]#fdisk /dev/vdc

欢迎使用 fdisk (util-linux 2.23.2)。

更改将停留在内存中，直到您决定将更改写入磁盘。

使用写入命令前请三思。

Device does not contain a recognized partition table

使用磁盘标识符 0x9fd8e9e7 创建新的 DOS 磁盘标签。

命令(输入 m 获取帮助)：n

Partition type:

p primary (0 primary, 0 extended, 4 free)

e extended

Select (default p):

Using default response p

分区号 (1-4，默认 1)：

起始 扇区 (2048-41943039，默认为 2048)：

将使用默认值 2048

Last 扇区, +扇区 or +size{K,M,G} (2048-41943039，默认为 41943039)：

将使用默认值 41943039

分区 1 已设置为 Linux 类型，大小设为 20 GiB

命令(输入 m 获取帮助)：t

已选择分区 1

Hex 代码(输入 L 列出所有代码)：8e

已将分区“Linux”的类型更改为“Linux LVM”

命令(输入 m 获取帮助)：w

The partition table has been altered!

Calling ioctl() to re-read partition table.

正在同步磁盘。

[root@mysql23 ~]#lsblk

NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT

vda 253:0 0 30G 0 disk

└─vda1 253:1 0 30G 0 part /

vdb 253:16 0 20G 0 disk

└─vdb1 253:17 0 20G 0 part

vdc 253:32 0 20G 0 disk

└─vdc1 253:33 0 20G 0 part

安装提供命令的软件

[root@mysql23 ~]#yum -y install lvm2

[root@mysql23 ~]# vgcreate vg0 /dev/vdb1 /dev/vdc1

Physical volume "/dev/vdb1" successfully created.

Physical volume "/dev/vdc1" successfully created.

Volume group "vg0" successfully created

4）创建VG

[root@mysql23 ~]# vgdisplay

--- Volume group ---

VG Name vg0

System ID

Format lvm2

Metadata Areas 2

Metadata Sequence No 1

VG Access read/write

VG Status resizable

MAX LV 0

Cur LV 0

Open LV 0

Max PV 0

Cur PV 2

Act PV 2

VG Size 39.99 GiB

PE Size 4.00 MiB

Total PE 10238

Alloc PE / Size 0 / 0

Free PE / Size 10238 / 39.99 GiB

VG UUID qkOlWI-lWuW-qNPN-8kHV-jjf4-PqNb-CdGC6y

5)创建LV

[root@mysql23 ~]# lvcreate -L 39.99G -n lv0 vg0

Rounding up size to full physical extent 39.99 GiB

Logical volume "lv0" created.

1. 格式化

[root@mysql23 ~]#mkfs.xfs /dev/vg0/lv0

[root@mysql23 ~]# blkid /dev/vg0/lv0

/dev/vg0/lv0: UUID="5f66084e-6e8c-4802-97c0-d9f240079915" TYPE="xfs"

配置数据库服务器

安装软件MySQL服务软件(2台数据库服务器都要安装)

1）解包软件

[root@mysql23 ~]#tar -xf mysql-5.7.17.tar -C /opt/

2）安装软件

[root@mysql23 ~]#cd /opt

[root@mysql23 ~]#yum -y install mysql-community-\*.rpm

1. 设置开机挂载

[root@mysql23 opt]# vim /etc/fstab

......

/dev/vg0/lv0 /var/lib/mysql xfs defaults 0 0

[root@mysql23 opt]# mount -a

1）启动服务

2台数据库服务器都要启动服务

[root@mysql23 opt]# systemctl enable --now mysqld

[root@mysql23 opt]# netstat -utnlp | grep mysqld

tcp6 0 0 :::3306 :::\* LISTEN 1571/mysqld

步骤四：管理员登录

1）查看初始密码

[root@mysql23 opt]# grep 'A temporary password' /var/log/mysqld.log

2020-01-08T13:54:05.325200Z 1 [Note] A temporary password is generated for root@localhost: l3#i2Z:Q/wRY

[root@mysql23 opt]# mysql -uroot -p'l3#i2Z:Q/wRY'

mysql: [Warning] Using a password on the command line interface can be insecure.

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 3

Server version: 5.7.17

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affiliates. Other names may be trademarks of their respective

owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> alter user root@localhost identified by '123qqq...A';

Query OK, 0 rows affected (0.00 sec)

mysql> exit

Bye

配置主从同步

**步骤一：配置主服务器**

1）启用binlog日志

[root@mysql23 ~]# vim /etc/my.cnf

......

[mysqld]

server\_id=23

log\_bin=master23

......

[root@mysql23 ~]# systemctl restart mysqld

1. 用户授权

[root@mysql23 opt]# mysql -uroot -p123qqq...A

mysql: [Warning] Using a password on the command line interface can be insecure.

Welcome to the MySQL monitor. Commands end with ; or \g.

Your MySQL connection id is 3

Server version: 5.7.17-log MySQL Community Server (GPL)

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affiliates. Other names may be trademarks of their respective

owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> grant replication slave on \*.\* to repluser@"%" identified by "123qqq...A";

Query OK, 0 rows affected, 1 warning (0.08 sec)

3）查看日志信息

mysql> show master status;

+-----------------+----------+--------------+------------------+-------------------+

| File | Position | Binlog\_Do\_DB | Binlog\_Ignore\_DB | Executed\_Gtid\_Set |

+-----------------+----------+--------------+------------------+-------------------+

| master23.000001 | 441 | | | |

+-----------------+----------+--------------+------------------+-------------------+

1 row in set (0.00 sec)

mysql> exit

Bye

**步骤二：配置从服务器**

1. 指定server\_id

[root@mysql24 opt]# vim /etc/my.cnf

......

[mysqld]

server\_id=24

......

[root@mysql24 ~]# systemctl restart mysqld

[root@mysql24 ~]# mysql -uroot -p'123qqq...A'

......

mysql> change master to master\_host='192.168.4.23',

-> master\_user='repluser',

-> master\_password='123qqq...A',

-> master\_log\_file='master23.000001',

-> master\_log\_pos=441;

Query OK, 0 rows affected, 2 warnings (0.50 sec)

mysql> start slave;

Query OK, 0 rows affected (0.08 sec)

[root@mysql24 opt]# mysql -uroot -p123qqq...A -e 'show slave status\G' | grep -i yes

mysql: [Warning] Using a password on the command line interface can be insecure.

Slave\_IO\_Running: Yes

Slave\_SQL\_Running: Yes

[root@mysql24 opt]# mysql -uroot -p123qqq...A -e 'show slave status\G' | grep -i 192.168.4.23

mysql: [Warning] Using a password on the command line interface can be insecure.

Master\_Host: 192.168.4.23

## **准备NFS服务存储磁盘**

[root@nfs25 ~]# fdisk /dev/vdb

欢迎使用 fdisk (util-linux 2.23.2)。

更改将停留在内存中，直到您决定将更改写入磁盘。

使用写入命令前请三思。

Device does not contain a recognized partition table

使用磁盘标识符 0x9a893b15 创建新的 DOS 磁盘标签。

命令(输入 m 获取帮助)：n

Partition type:

p primary (0 primary, 0 extended, 4 free)

e extended

Select (default p):

Using default response p

分区号 (1-4，默认 1)：

起始 扇区 (2048-41943039，默认为 2048)：

将使用默认值 2048

Last 扇区, +扇区 or +size{K,M,G} (2048-41943039，默认为 41943039)：

将使用默认值 41943039

分区 1 已设置为 Linux 类型，大小设为 20 GiB

命令(输入 m 获取帮助)：w

The partition table has been altered!

Calling ioctl() to re-read partition table.

正在同步磁盘。

[root@nfs25 ~]# mkfs.xfs /dev/vdb1

[root@nfs25 ~]# vim /etc/fstab

......

/dev/vdb1 /sitedir xfs defaults 0 0

[root@nfs25 ~]# mkdir /sitedir

[root@nfs25 ~]# chmod o+w /sitedir

[root@nfs25 ~]# mount -a

[root@nfs25 ~]# yum -y install nfs rpcbind

[root@nfs25 ~]# vim /etc/exports

/sitedir \*(rw)

[root@nfs25 ~]# exportfs -r

[root@nfs25 ~]# systemctl enable --now rpcbind

[root@nfs25 ~]# systemctl enable --now nfs

Created symlink from /etc/systemd/system/multi-user.target.wants/nfs-server.service to /usr/lib/systemd/system/nfs-server.service.

[root@nfs25 ~]# showmount -e localhost

Export list for localhost:

/sitedir \*

**配置网站服务**

**安装软件**

[root@web34 ~]#yum -y install gcc zlib-devel pcre-devel

[root@web34 ~]#tar -xf nginx-1.12.2.tar.gz -C /opt

[root@web34 ~]# cd /opt/nginx-1.12.2/

[root@web34 nginx-1.12.2]#./configure

[root@web34 nginx-1.12.2]# make && make install

[root@web34 ~]#yum -y install php56w.x86\_64 php56w-mysql .x86\_64 php56w-fpm.x86\_64

[root@web34 ~]#yum -y install nfs-utils

[root@web34 ~]#showmount -e 192.168.4.30

Export list for 192.168.4.25:

/sitedir \*

[root@web34 ~]#vim /etc/fstab

......

192.168.4.30:/sitedir /usr/local/nginx/html nfs defaults 0 0

[root@web34 ~]#mount -a

[root@web34 ~]# df -h

......

192.168.4.30:/sitedir 10G 32M 10G 1% /usr/local/nginx/html

[root@web34 ~]#vim +65 /usr/local/nginx/conf/nginx.conf

......

location ~ \.php$ {

root html;

fastcgi\_pass 127.0.0.1:9000;

fastcgi\_index index.php;

include fastcgi.conf;

......

[root@web34 ~]#ln -s /usr/local/nginx/sbin/nginx /sbin/nginx

[root@web34 ~]#nginx

[root@web34 ~]#systemctl enable --now php-fpm

## **部署LB集群**

[root@haproxy27 ~]# yum -y install haproxy

......

listen stats \*:1080

stats refresh 30s

stats uri /stats

stats realm Haproxy Manager

stats auth admin:admin

listen webserver \*:80

balance roundrobin

server web33 192.168.4.33:80 check inter 2000 rise 2 fall 5

server web34 192.168.4.34:80 check inter 2000 rise 2 fall 5

[root@haproxy27 ~]# systemctl enable --now haproxy.service

Created symlink from /etc/systemd/system/multi-user.target.wants/haproxy.service to /usr/lib/systemd/system/haproxy.service.

## **部署HA集群**

[root@haproxy28 ~]# yum -y install haproxy

[root@haproxy28 ~]# scp root@192.168.4.27:/etc/haproxy/haproxy.cfg /etc/haproxy/

[root@haproxy28 ~]# systemctl enable --now haproxy.service

Created symlink from /etc/systemd/system/multi-user.target.wants/haproxy.service to /usr/lib/systemd/system/haproxy.service.

[root@haproxy27 ~]# yum -y install keepalived

[root@haproxy27 ~]# vim /etc/keepalived/keepalived.conf

1 ! Configuration File for keepalived

2

3 global\_defs {

4 notification\_email {

5 acassen@firewall.loc

6 failover@firewall.loc

7 sysadmin@firewall.loc

8 }

9 notification\_email\_from Alexandre.Cassen@firewall.loc

10 smtp\_server 127.0.0.1

11 smtp\_connect\_timeout 30

12 router\_id LVS\_DEVEL

13 vrrp\_skip\_check\_adv\_addr

14 vrrp\_strict

15 vrrp\_garp\_interval 0

16 vrrp\_gna\_interval 0

17 vrrp\_iptables

18 }

19

20 vrrp\_script chk\_http\_port {

21 script "/opt/check\_haproxy.sh"

22 interval 1

23 weight 2

24 }

25 vrrp\_instance VI\_1 {

26 state MASTER

27 interface eth0

28 virtual\_router\_id 51

29 priority 120

30 advert\_int 1

31 authentication {

32 auth\_type PASS

33 auth\_pass 1111

34 }

35 track\_script {

36 chk\_http\_port

37 }

38 virtual\_ipaddress {

39 192.168.4.100

40 }

41 }

**故障切换脚本**

[root@haproxy27 ~]# vim /opt/check\_haproxy.sh

#!/bin/bash

pid=`ps -C haproxy --no-header | wc -l`

if [ $pid -eq 0 ];then

systemctl start haproxy

sleep 2

if [ $(ps -C hapoxy --no-header | wc -l) -eq 0 ];then

killall -9 keepalived

fi

fi

[root@haproxy27 ~]# chmod +x /opt/check\_haproxy.sh

[root@haproxy27 ~]# systemctl enable --now keepalived.service

Created symlink from /etc/systemd/system/multi-user.target.wants/keepalived.service to /usr/lib/systemd/system/keepalived.service.

[root@haproxy27 ~]# ip a s | grep 192.168.4.100

inet 192.168.4.100/32 scope global eth0

[root@haproxy28 ~]#yum -y install keepalived

[root@haproxy28 ~]# rsync -av 192.168.4.27:/etc/keepalived/keepalived.conf /etc/keepalived/

[root@haproxy28 ~]# rsync -av 192.168.4.27:/opt/check\_haproxy.sh /opt/

[root@haproxy28 ~]# vim /etc/keepalived/keepalived.conf

26 state BACKUP

29 priority 50

[root@haproxy28 ~]# systemctl enable --now keepalived.service

Created symlink from /etc/systemd/system/multi-user.target.wants/keepalived.service to /usr/lib/systemd/system/keepalived.service.

[root@haproxy28 ~]# ip a s | grep 192.168.4.100

**配置监控服务**

**步骤一：部署运行环境LNMP**

安装LNMP环境

[root@zabbix26 ~]# yum -y install gcc pcre-devel openssl-devel

[root@zabbix26 ~]# tar -xf nginx-1.12.2.tar.gz -C /opt/

[root@zabbix26 ~]# cd /opt/nginx-1.12.2

[root@zabbix26 nginx-1.12.2]# ./configure --with-http\_ssl\_module

[root@zabbix26 nginx-1.12.2]# make && make install

[root@zabbix26 nginx-1.12.2]# yum -y install php php-mysql php-fpm

[root@zabbix26 nginx-1.12.2]# yum -y install mariadb-server mariadb-devel

[root@zabbix26 ~]# vim /usr/local/nginx/conf/nginx.conf

.......

http {

fastcgi\_buffers 8 16k;

fastcgi\_buffer\_size 32k;

fastcgi\_connect\_timeout 300;

fastcgi\_send\_timeout 300;

fastcgi\_read\_timeout 300;

......

location ~ \.php$ {

root html;

fastcgi\_pass 127.0.0.1:9000;

fastcgi\_index index.php;

include fastcgi.conf;

}

......

3）启动服务

启动Nginx、PHP-FPM、MariaDB服务，关闭SELinux与防火墙。

[root@zabbix26 ~]# systemctl enable --now mariadb php-fpm

[root@zabbix26 ~]# ln -s /usr/local/nginx/sbin/nginx /sbin/nginx

[root@zabbix26 ~]# nginx

[root@zabbix26 ~]# firewall-cmd --set-default-zone=trusted

[root@zabbix26 ~]# setenforce 0

1）安装源码Zabbix软件

[root@zabbix26 ~]# yum -y install net-snmp-devel curl-devel

[root@zabbix26 ~]# yum -y install libevent-devel mysql-devel

[root@zabbix26 ~]# tar -xf zabbix-3.4.4.tar.gz -C /opt/

[root@zabbix26 ~]# cd /opt/zabbix-3.4.4/

[root@zabbix26 zabbix-3.4.4]#./configure --enable-server --enable-proxy --enable-agent --with-mysql=/usr/bin/mysql\_config --with-net-snmp --with-libcurl

[root@zabbix26 zabbix-3.4.4]#make install

步骤三：初始化配置

1. 创建数据库

[root@zabbix26 zabbix-3.4.4]# mysql

Welcome to the MariaDB monitor. Commands end with ; or \g.

Your MariaDB connection id is 2

Server version: 5.5.56-MariaDB MariaDB Server

Copyright (c) 2000, 2017, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> create database zabbix character set utf8;

Query OK, 1 row affected (0.00 sec)

MariaDB [(none)]> grant all on zabbix.\* to zabbix@localhost identified by 'zabbix';

Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> exit

Bye

[root@zabbix26 zabbix-3.4.4]# cd database/mysql/

[root@zabbix26 mysql]# mysql -uzabbix -pzabbix zabbix < schema.sql

[root@zabbix26 mysql]# mysql -uzabbix -pzabbix zabbix < images.sql

[root@zabbix26 mysql]# mysql -uzabbix -pzabbix zabbix < data.sql

上线Zabbix页面

[root@zabbix26 ~]# cd /opt/zabbix-3.4.4/frontends/php/

[root@zabbix26 php]# cp -a \* /usr/local/nginx/html/

[root@zabbix26 php]# chmod -R 777 /usr/local/nginx/html/

2）安装依赖

[root@zabbix26 ~]# yum -y install php-gd php-xml php-bcmath php-mbstring

3）修改php程序运行参数

[root@zabbix26 ~]# vim /etc/php.ini

384 max\_execution\_time = 300 #最大执行时间,单位是秒

394 max\_input\_time = 300 #服务器接收数据的时间限制

405 memory\_limit = 128M #内存容量限制

672 post\_max\_size = 32M #POST数据最大容量

878 date.timezone = Asia/Shanghai #设置时区

[root@zabbix26 ~]# systemctl restart php-fpm

**修改配置文件**

[root@zabbix26 ~]# vim /usr/local/etc/zabbix\_server.conf

38 LogFile=/tmp/zabbix\_server.log #设置日志

85 DBHost=localhost #数据库主机, 默认改行是被注释的

95 DBName=zabbix #设置数据库名称

111 DBUser=zabbix #设置数据库账户

119 DBPassword=zabbix #设置数据库密码,默认改行被注释的

**步骤五：启动服务**

1）启动服务

[root@zabbix26 ~]# useradd -s /sbin/nologin zabbix

[root@zabbix26 ~]# zabbix\_server

2）查看服务状态信息

[root@zabbix26 ~]# netstat -utnlp | grep zabbix\_server

tcp 0 0 0.0.0.0:10051 0.0.0.0:\* LISTEN 6432/zabbix\_server

**步骤三：部署被监控主机Zabbix Agent**

1）源码安装Zabbix agent软件(以web34为例)

[root@web34 ~]# yum -y install gcc pcre-devel

[root@web34 ~]# tar -xf zabbix-3.4.4.tar.gz -C /opt/

[root@web34 ~]# cd /opt/zabbix-3.4.4/

[root@web34 zabbix-3.4.4]# ./configure --enable-agent

[root@web34 zabbix-3.4.4]# make install

2）修改agent配置文件，启动Agent

[root@web34 ~]# vim /usr/local/etc/zabbix\_agentd.conf

93 #Server=127.0.0.1

118 StartAgents=0

134 ServerActive=192.168.4.26

145 Hostname=web34

183 RefreshActiveChecks=120

[root@web34 ~]# useradd -s /sbin/nologin zabbix

[root@web34 ~]# zabbix\_agentd

[root@web34 ~]# netstat -utnlp | grep :10050 #没有端口

[root@web34 ~]# ps -C zabbix\_agentd #有进程

PID TTY TIME CMD

6436 ? 00:00:00 zabbix\_agentd

6437 ? 00:00:00 zabbix\_agentd

6438 ? 00:00:00 zabbix\_agentd

## **配置及使用Zabbix监控系统**

### **3.1 问题**

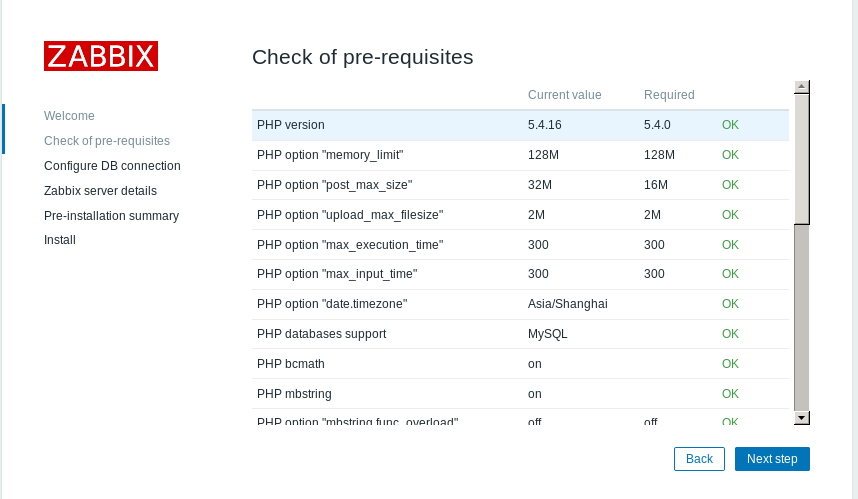
沿用练习一，使用Zabbix监控平台监控Linux服务器，实现以下目标：

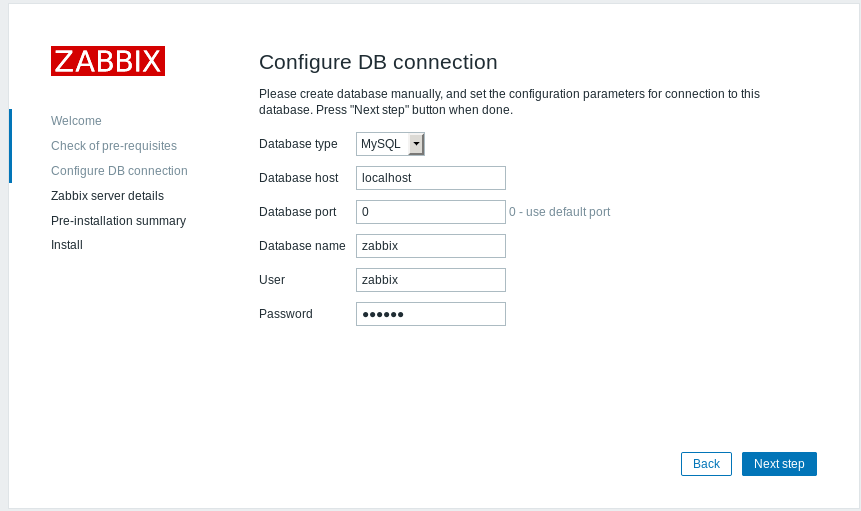
1. 监控CPU
2. 监控内存
3. 监控进程
4. 监控网络流量
5. 监控硬盘

### **3.2 方案**

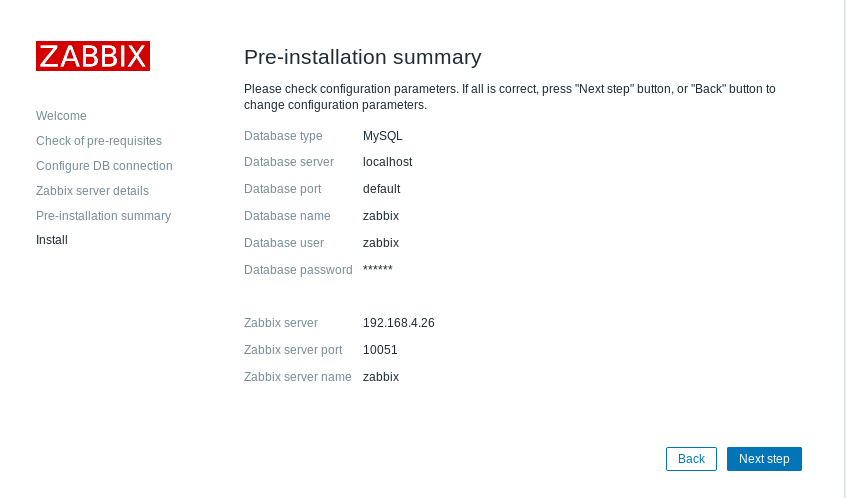
通过Zabbix监控平台，添加被监控主机并链接监控模板，Zabbix默认模板就可以监控CPU、内存、进程、网络、磁盘等。

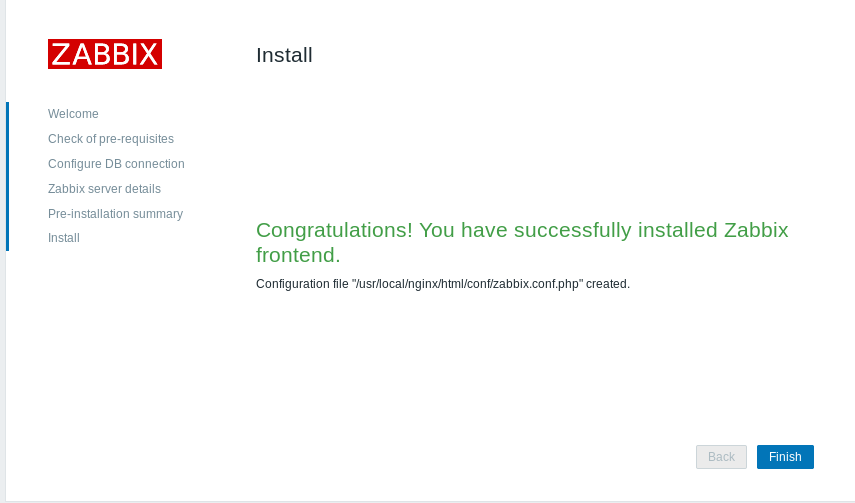


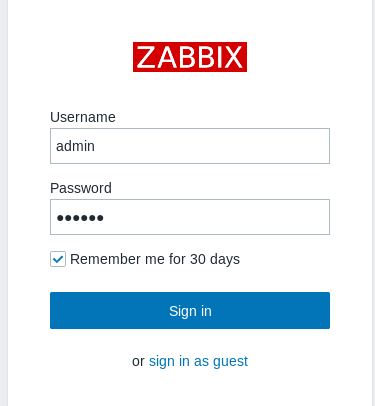




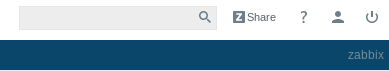


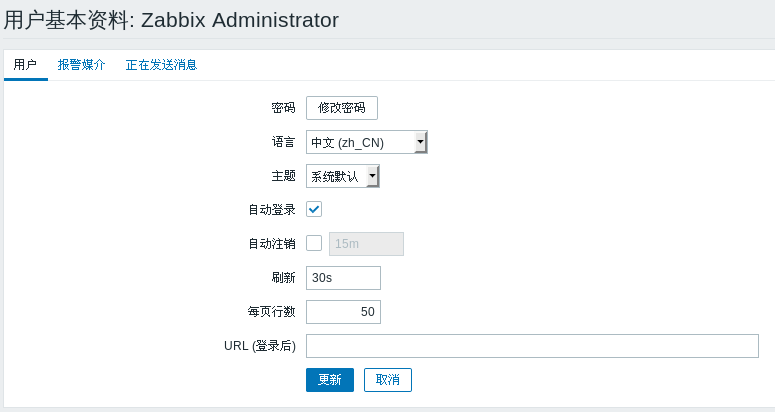






**修改登录密码、设置语言中文模式**





**步骤一：创建主动模式监控模板**



**步骤二：配置自动发现**

1）创建自动发现规则



3）创建Action动作

通过Configuration（配置）--> Actions Event source(事件源)：自动发现(Discovery)-->Create action（创建动作），如图-9所示。



