Collectd + InfluxDB + Grafana moinitoring system install for CentOS 7

**深绿色 为shell字符界面终端执行的命令**

**白 色 白色为执行命令返回的数据显示**

**红 色 为配置文件中的更改项**

**黄 色** **为注释**

撰写者：付建功

日 期：2016.01.23

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### 简介

软件：

Collectd ：由C语言编写，性能高，可移植性好，用来周期性的收集系统相关性能数据。

InfluxDB ：由Go 语言开发的开源分布式时序、事件和指标数据库，用于存储指标、事件、分析等数据

Grafana ：由JavaScript编写的开源的，功能齐全的度量仪表盘和图形编辑器

三者的关系：

采集数据（collectd）-> 存储数据（InfluxDB) -> 显示数据（Grafana）

服务器：单节点（all-in-one模式）

本次安装的机器

IP 地 址 ：10.1.1.4

内网域名：c7-mini.study.fjg

系统：CentOS 7 mini install

### 一、准备基础环境

#### 1．关闭firewalld、selinux，关闭防火墙开机自启

# **systemctl stop firewalld**

# **systemctl disable firewalld**

# **sed -i "s/^SELINUX=.\*/SELINUX=disabled/" /etc/selinux/config**

### 2．添加epel源

# **yum -y install yum-plugin-priorities**

# **sed -i -e "s/\]$/\]\npriority=1/g" /etc/yum.repos.d/CentOS-Base.repo**

# **yum -y install epel-release**

# **sed -i -e "s/\]$/\]\npriority=5/g" /etc/yum.repos.d/epel.repo**

# **sed -i -e "s/enabled=1/enabled=0/g" /etc/yum.repos.d/epel.repo**

# **yum clean all**

# **yum --enablerepo=epel makecache fast**

### 3．校准时间

# **yum -y install ntpdate**

# **\cp /usr/share/zoneinfo/Asia/Shanghai /etc/localtime**

# **ntpdate time.windows.com**

### 4．更新并重启

# **yum -y update**

# **yum -y upgrade**

# **reboot**

### 5．安装常用软件

# **yum -y install vim tree lrzsz wget**

# 二、安装Collectd并配置

# 模板配置文件，仅供参考，具体配置细节根据具体情况更改。

### 1．安装Collectd

**# yum -y install --enablerepo=epel collectd collectd-ping collectd-iptables collectd-mysql collectd-ping**

### 2．配置Collectd

#### 1）全局配置

# **vim /etc/collectd.conf**

**Hostname "unicom-LB-1"**

**# 关闭FQDN 通过Hostname设置手机数据的主机名，默认是使用主机名作为数据的host值**

**FQDNLookup false**

**# 是否开启FQDN**

**BaseDir "/var/lib/collectd"**

**# 守护进程工作的目录**

**PIDFile "/var/run/collectd.pid"**

**# PID文件位置**

**PluginDir "/usr/lib64/collectd"**

**# collectd插件位置**

**TypesDB "/usr/share/collectd/types.db"**

#### 2）插件配置

本文件所选的插件只是为了安装完成演示用。具体的插件选择根据个人的需求自己配置

具体的插件说明请参考官网：https://collectd.org/documentation/manpages/collectd.conf.5.shtml

# **vim /etc/collectd.conf**

**#LoadPlugin syslog**

**# 注释掉默认的syslog插件**

**LoadPlugin logfile**

**# 开启logfile插件，因为默认的syslog会把日志输出信息都输出到message中**

**# 开启logfile插件，可以指定日志输出的目录**

**<Plugin logfile>**

**# logfile插件的配置参数**

**LogLevel info**

**# 设定日志级别，级别有：debug|info|notice|warning|err**

**File "/var/log/collectd.log"**

**# 指定日志目录**

**Timestamp true**

**# 是否添加时间戳**

**</Plugin>**

**<LoadPlugin cpu>**

**Interval 10**

**</LoadPlugin>**

**# 加载 cpu插件，要想设置数据收集的时间间隔，必须使用上面的格式，通过Interval控制收集间隔**

**LoadPlugin network**

**# 加载network插件，此插件用于配置collectd收集数据的存放服务器！**

**<Plugin network>**

**# network插件的一些具体参数配置**

**Server "10.1.1.4" "25826"**

**# 指定存放collectd收集的数据的服务器IP地址和端口**

**MaxPacketSize 1452**

**# 指定最大的包大小**

**</Plugin>**

注意：

1. network插件必须有！如果没有的话在collectd启动时日志中会循环输出以下内容：

**# journalctl -u collectd**

**Dec 20 14:57:33 c7-mini.study.fjg collectd[2435]: plugin\_load: plugin "syslog" successfully loaded.**

**Dec 20 14:57:33 c7-mini.study.fjg collectd[2435]: plugin\_load: plugin "cpu" successfully loaded.**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: Systemd detected, trying to signal readyness.**

**Dec 20 14:57:53 c7-mini.study.fjg systemd[1]: Started Collectd statistics daemon.**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: Initialization complete, entering read-loop.**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: plugin\_dispatch\_values: No write callback has been registered. Please load at least one output plugin, if you want the collected data to be stored.**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: Filter subsystem: Built-in target `write': Dispatching value to all write plugins failed with status 2 (ENOENT). Most likely this means you didn't load any write plugins.**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: Available write targets: [none]**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: Available write targets: [none]**

**Dec 20 14:57:53 c7-mini.study.fjg collectd[2435]: Available write targets: [none]**

1. MaxPackeSize最好不要设置太大，当MaxPackeSize的值大于1452时会可能造成丢包现象

以下是官网的说明

**Large UDP packets**

**Please note that UDP packets larger than the standard size of 1452 are dropped at the time of ingestion. Be sure to set MaxPacketSize to 1452 in the collectd configuration**

### 3．启动Collectd并配置开机自启动

**# systemctl restart collectd**

**# systemctl enable collectd**

# 三、安装InfluxDB并配置

### 1．下载InfluxDB软件

**# mkdir -p /root/soft/influxdb**

**# cd !$**

**# wget https://dl.influxdata.com/influxdb/releases/influxdb-1.1.1.x86\_64.rpm**

### 2．安装

**# cd /root/soft/influxdb/**

**# yum -y localinstall influxdb-1.1.1.x86\_64.rpm**

### 3．配置

#### 1）配置UDP

因为collectd在向InfluxDB传输数据时是基于udp协议来的，而一些系统（尤其是linux）默认对UDP协议做了很大的限制，

* + 1. 查看默认系统默认的UDP/IP默认缓冲区大小

**# sysctl net.core.rmem\_max**

**net.core.rmem\_max = 212992**

**# sysctl net.core.rmem\_default**

**net.core.rmem\_default = 212992**

通过查看可以看到默认的数值只有212992字节

* + 1. 配置UDP/IP缓冲区大小，开机自动设置

**# echo "net.core.rmem\_max=26214400" >> /etc/sysctl.conf**

**# echo "net.core.rmem\_default=26214400" >> /etc/sysctl.conf**

* + 1. 配置UDP/IP即时生效

**# sysctl -w net.core.rmem\_max=26214400**

**# sysctl -w net.core.rmem\_default=26214400**

#### 2）配置InfluxDB允许collectd写入原生数据，该数据通过UDP传输

**# vim /etc/influxdb/influxdb.conf**

**[[collectd]]**

**enabled = true**

**#开启接受数据**

**bind-address = ":25826"**

**# 监听的端口**

**database = "collectd"**

**# 用于collectd写入数据的数据库名称，在collectd启动的时候collectd数据库会自动创建！**

**retention-policy = ""**

**batch-size = 5000**

**# 缓冲节点上限，如果超过这个数量将会进行磁盘写入**

**batch-pending = 10**

**# 在内存中等待的数量**

**batch-timeout = "10s"**

**# flush的时间间隔，即使batch-size没有达到上限**

**read-buffer = 0**

**# UDP的缓冲大小，“0”代表使用系统的默认参数，这个数值不能超过系统的默认数值！**

**typesdb = "/usr/share/collectd/types.db"**

### 4．启动InfluxDB并配置开机自启

**# systemctl restart influxdb**

**# systemctl enable influxdb**

### 5．登录数据库查看是否有数据存入

**# influx**

**Visit https://enterprise.influxdata.com to register for updates, InfluxDB server management, and monitoring.**

**Connected to http://localhost:8086 version 1.1.1**

**InfluxDB shell version: 1.1.1**

**> show databases;**

**name: databases**

**name**

**----**

**\_internal**

**collectd**

**> use collectd**

**Using database collectd**

**> show measurements**

**name: measurements**

**name**

**----**

**cpu\_value**

**>** **select \* from cpu\_value order by time desc limit 10;**

**name: cpu\_value**

**time host instance type type\_instance value**

**------ ------ ------ ------ ------** **------**

**1482243788143949000 c7-mini.study.fjg 1 cpu nice 0**

**1482243788143947000 c7-mini.study.fjg 1 cpu wait 488**

**1482243788143945000 c7-mini.study.fjg 0 cpu wait 456**

**1482243788143939000 c7-mini.study.fjg 1 cpu user 195**

**1482243788143934000 c7-mini.study.fjg 0 cpu user 186**

**1482243778143761000 c7-mini.study.fjg 1 cpu idle 1.136038e+06**

**1482243778143760000 c7-mini.study.fjg 0 cpu idle 1.135351e+06**

**1482243778143759000 c7-mini.study.fjg 1 cpu steal 0**

**1482243778143759000 c7-mini.study.fjg 0 cpu steal 0**

**1482243778143758000 c7-mini.study.fjg 1 cpu softirq 5**

### 6．添加数据库用户，并进行授权

collectd\_read用于Grafana读取数据。

**# influx**

**Visit https://enterprise.influxdata.com to register for updates, InfluxDB server management, and monitoring.**

**Connected to http://localhost:8086 version 1.1.1**

**InfluxDB shell version: 1.1.1**

**> show users**

**user admin**

**---- -----**

**> create user "collectd\_read" with password 'jxlw@1234'**

**> show users**

**user admin**

**---- -----**

**collectd\_read false**

**> grant read on collectd to collectd\_read**

**>** **show grants for "collectd\_read"**

**database privilege**

**-------- ---------**

**collectd READ**

# 安装Grafana并配置

### 1．安装MySQL数据库

用于存放Grafana的配置信息和图表信息

**# yum -y install mysql-server**

**# systemctl start mariadb**

**# systemctl enable mariadb**

**# mysql\_secure\_installation**

**NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB**

**SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!**

**In order to log into MariaDB to secure it, we'll need the current**

**password for the root user. If you've just installed MariaDB, and**

**you haven't set the root password yet, the password will be blank,**

**so you should just press enter here.**

**Enter current password for root (enter for none):****<enter> //输入root现在的密码，没有直接回车**

**OK, successfully used password, moving on...**

**Setting the root password ensures that nobody can log into the MariaDB**

**root user without the proper authorisation.**

**Set root password? [Y/n] y //设置root用户的密码**

**New password: //输入密码**

**Re-enter new password: //再次输入**

**Password updated successfully!**

**Reloading privilege tables..**

**... Success!**

**By default, a MariaDB installation has an anonymous user, allowing anyone**

**to log into MariaDB without having to have a user account created for**

**them. This is intended only for testing, and to make the installation**

**go a bit smoother. You should remove them before moving into a**

**production environment.**

**Remove anonymous users? [Y/n] <enter> //删除匿名用户**

**... Success!**

**Normally, root should only be allowed to connect from 'localhost'. This**

**ensures that someone cannot guess at the root password from the network.**

**Disallow root login remotely? [Y/n] <enter> //禁止root用户远程登录**

**... Success!**

**By default, MariaDB comes with a database named 'test' that anyone can**

**access. This is also intended only for testing, and should be removed**

**before moving into a production environment.**

**Remove test database and access to it? [Y/n] <enter> //删除test数据库，并删除相应的权限**

**- Dropping test database...**

**... Success!**

**- Removing privileges on test database...**

**... Success!**

**Reloading the privilege tables will ensure that all changes made so far**

**will take effect immediately.**

**Reload privilege tables now? [Y/n] <enter> //删除privilege表**

**... Success!**

**Cleaning up...**

**All done! If you've completed all of the above steps, your MariaDB**

**installation should now be secure.**

**Thanks for using MariaDB!**

### 2．创建数据库grafana，创建用户并对用户进行数据库grafana的授权

**# mysql -uroot -p 1234.com -e "create database grafana"**

**# mysql -uroot -p**

**Enter password: <输入密码>**

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

**Your MariaDB connection id is 16**

**Server version: 5.5.52-MariaDB MariaDB Server**

**Copyright (c) 2000, 2016, Oracle, MariaDB Corporation Ab and others.**

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

**MariaDB [(none)]> CREATE USER 'grafana'@'10.1.1.4' IDENTIFIED BY 'grafana';**

**Query OK, 0 rows affected (0.00 sec)**

**MariaDB [(none)]> grant all privileges on grafana.\* to 'grafana'@'10.1.1.4';**

**Query OK, 0 rows affected (0.00 sec)**

**MariaDB [(none)]>**

### 3．下载Grafana软件

**# mkdir -p /root/soft/grafana**

**# cd !$**

**# wget** **https://grafanarel.s3.amazonaws.com/builds/grafana-4.0.2-1481203731.x86\_64.rpm**

### 4．安装

**# cd /root/soft/grafana/**

**# yum -y localinstall grafana-4.0.2-1481203731.x86\_64.rpm**

### 5．配置grafana

**# vim /etc/grafana/grafana.ini**

**type = mysql**

**# 指定数据库类型为MySQL**

**host = 127.0.0.1:3306**

**# 设置数据库的IP地址和端口**

**name = grafana**

**# 指定数据库的名称**

**user = grafana**

**# 设置用户名**

**password = grafana**

**# 设置密码**

**#################################### SMTP / Emailing ##########################**

**[smtp]**

**enabled = true**

**# 开启邮件功能**

**host = smtp.exmail.qq.com:465**

**# 设置SMTP服务器地址**

**user = \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**# 设置该SMTP服务器中的用户**

**password = \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**# 输入邮箱账户的密码**

**skip\_verify = false**

**# 跳过验证**

**from\_address = \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**# 设置发送邮件显示的用户**

### 6．启动Grafana并设置开机自启

**# systemctl start grafana-server**

**# systemctl enable grafana-server**

### 配置Grafana web页面

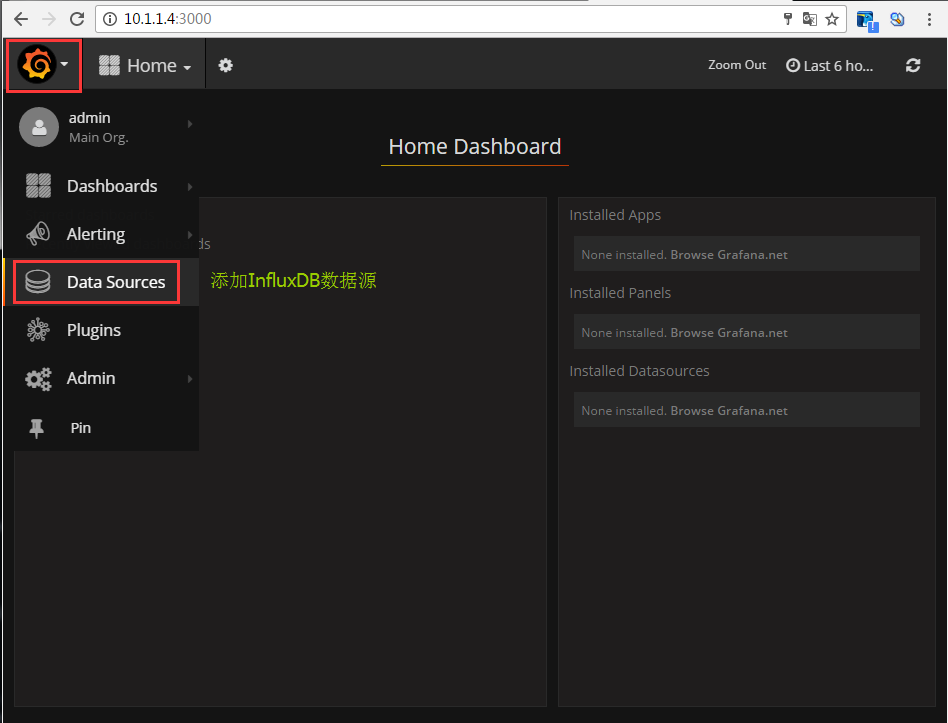
#### 1）登录

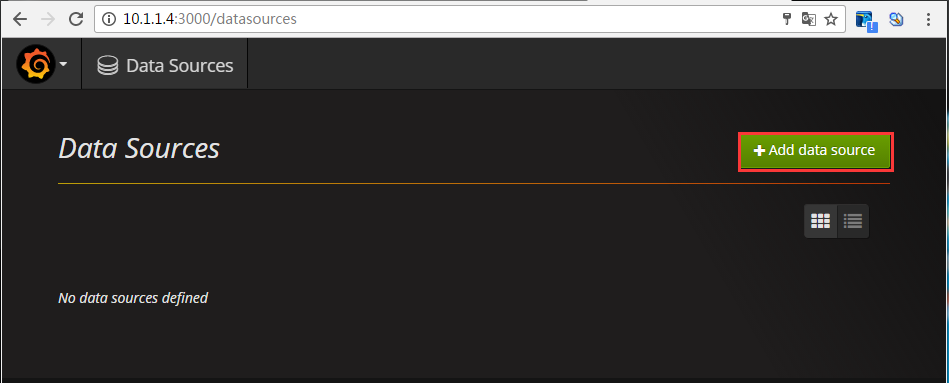
登录<http://IP:3000>,用户名和密码默认为admin/admin

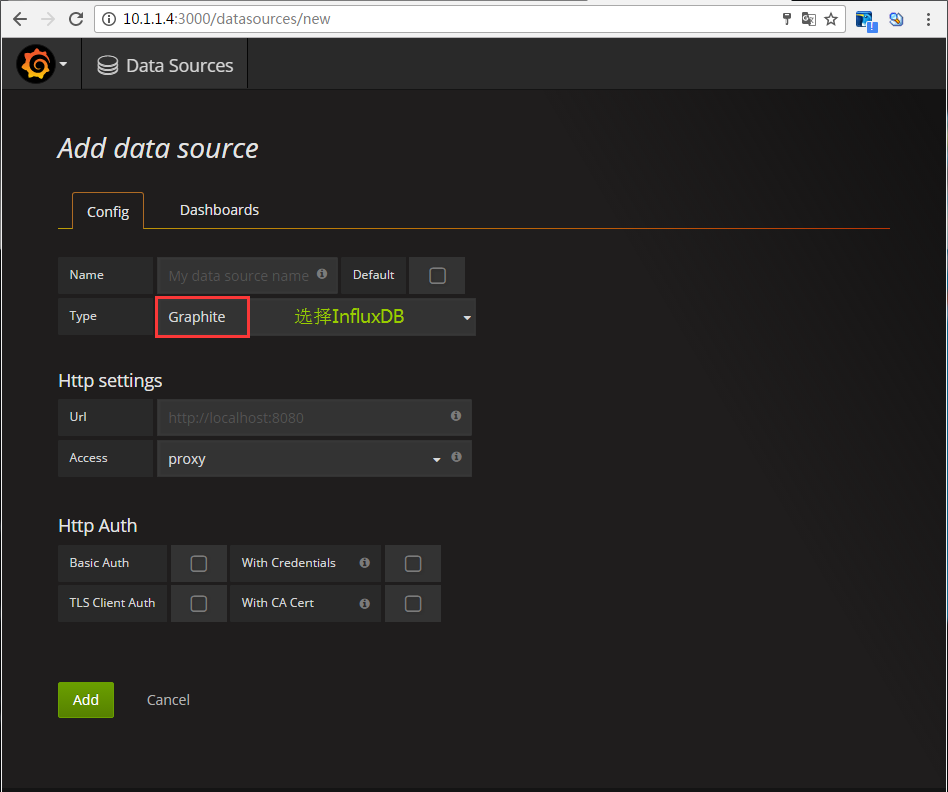
IP为各grafana服务器地址

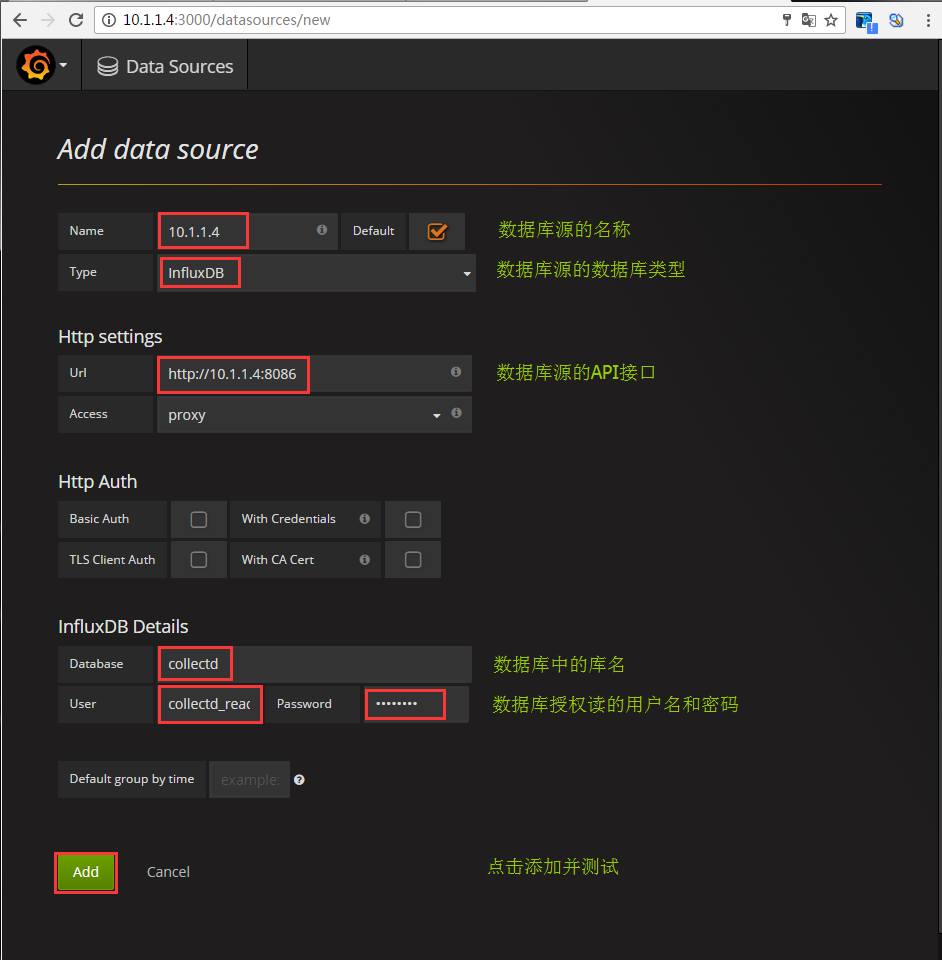


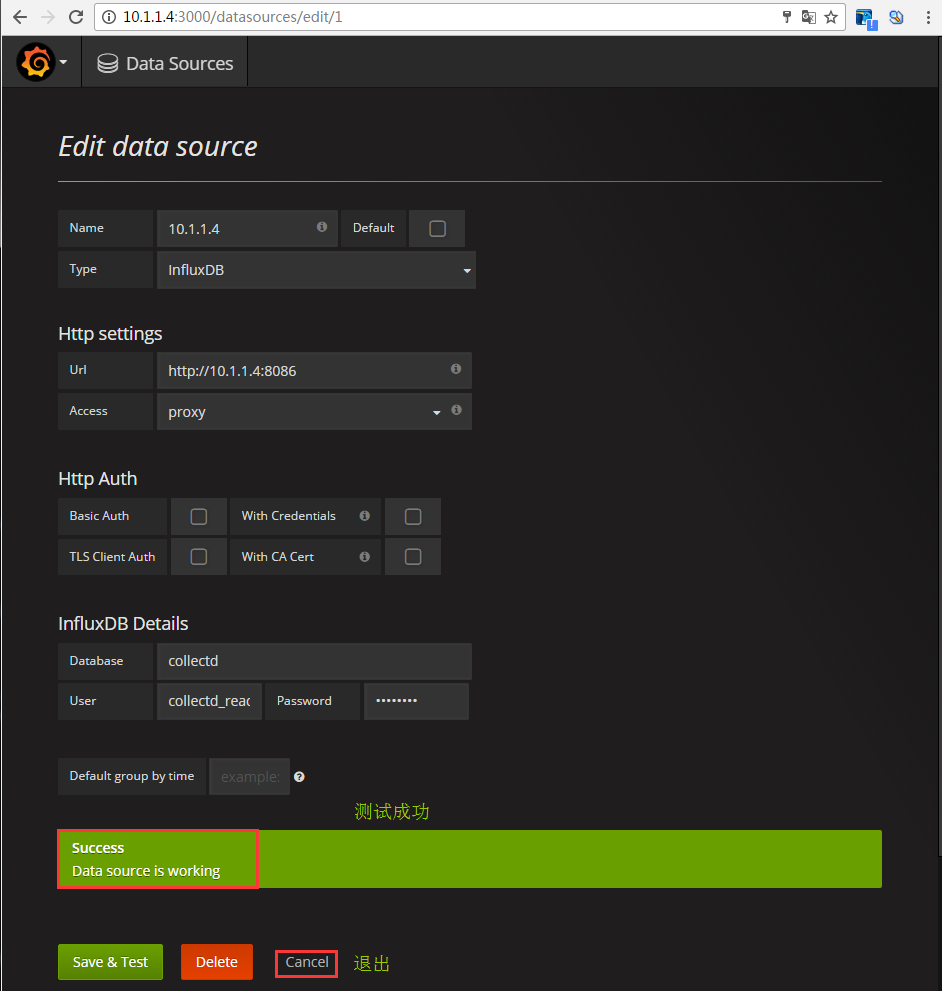
#### 2）配置数据源

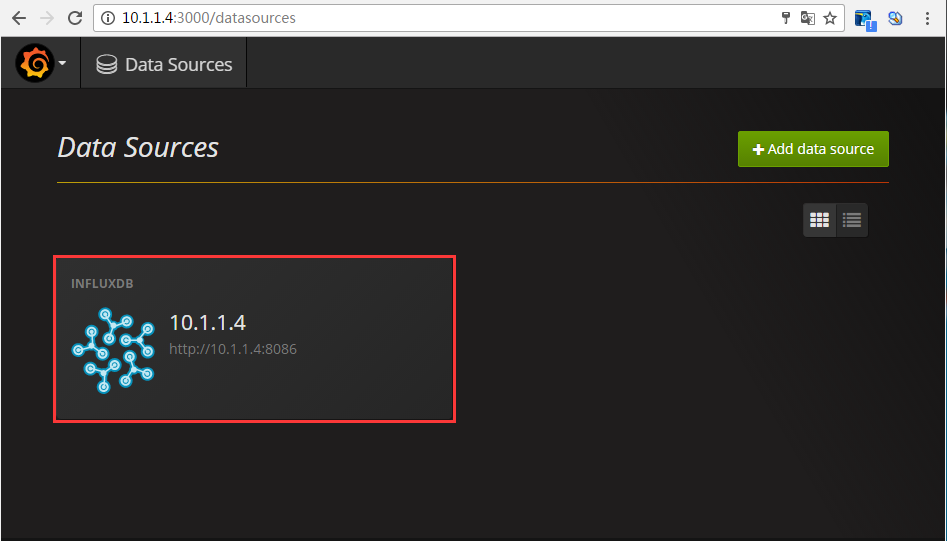




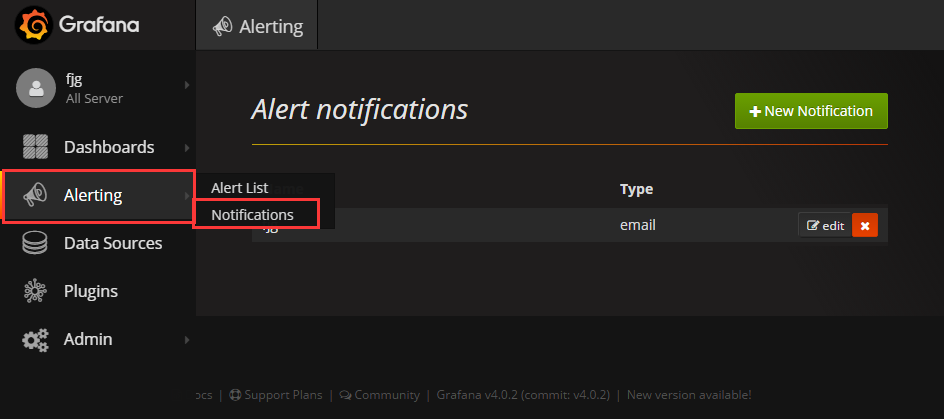




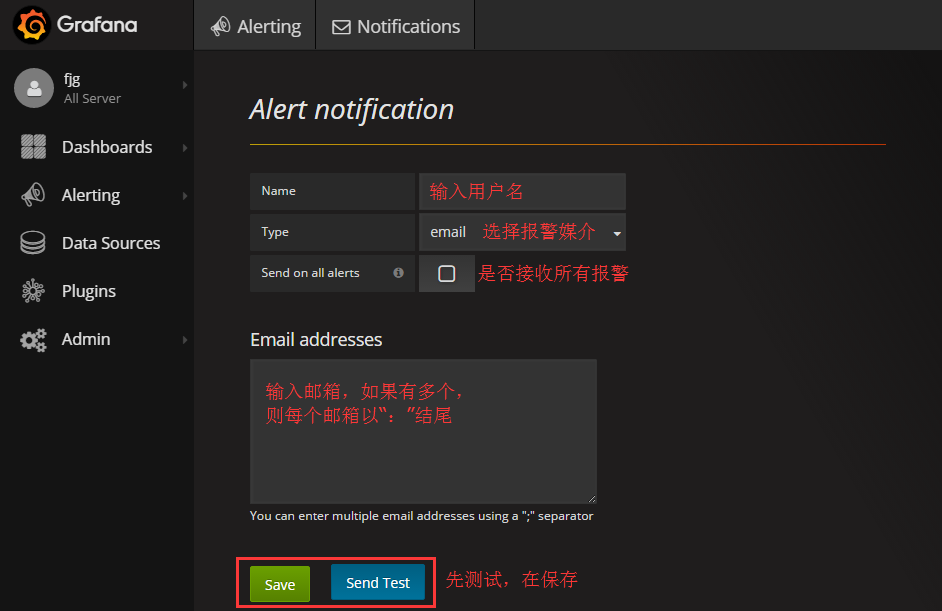




#### 3）配置报警收件人用户

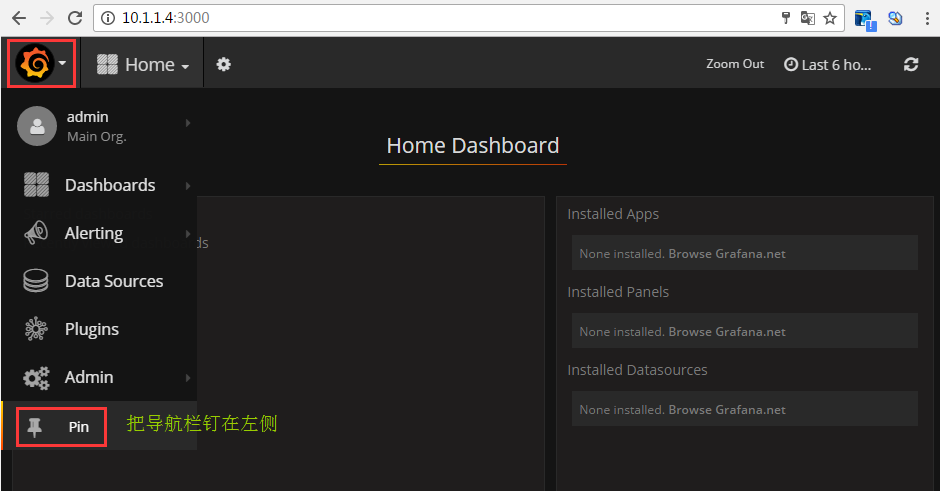


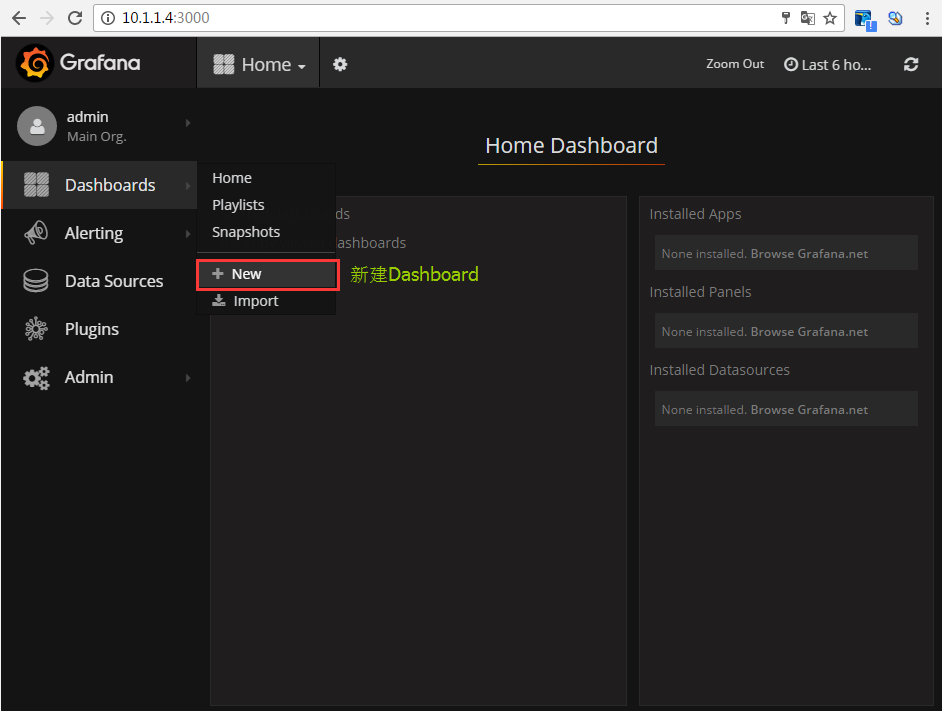
点击“New Notification”

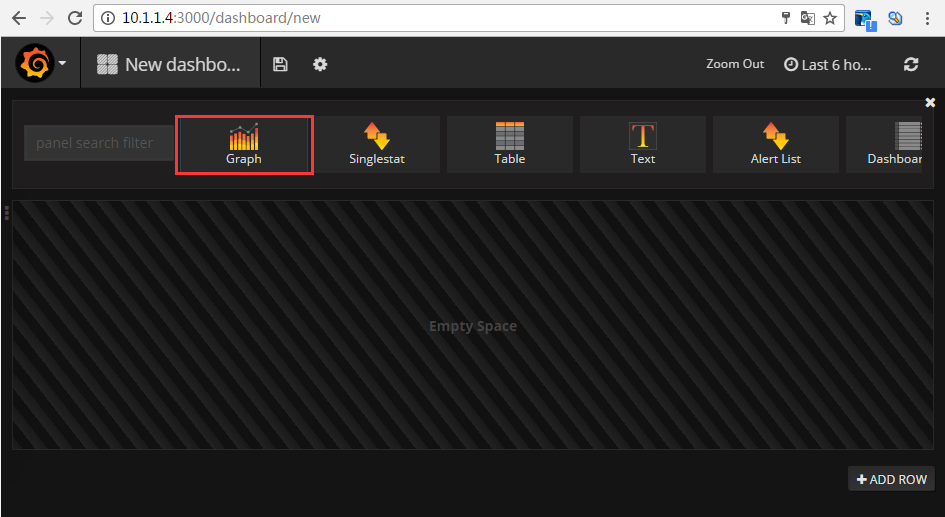


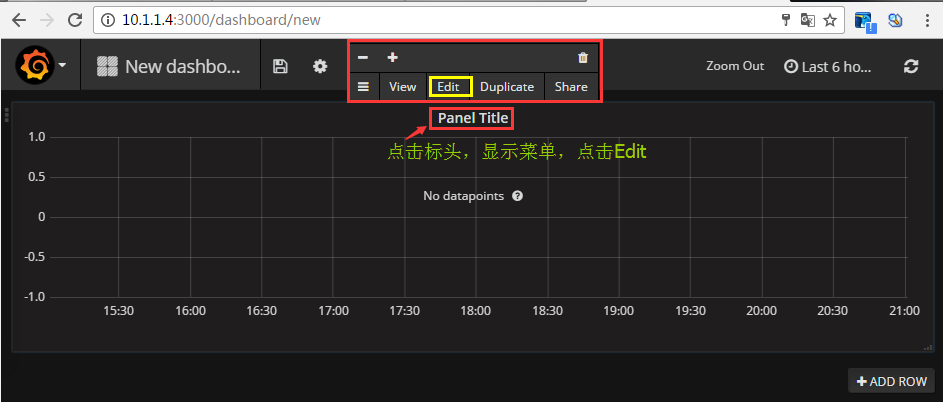
#### 4）配置图表

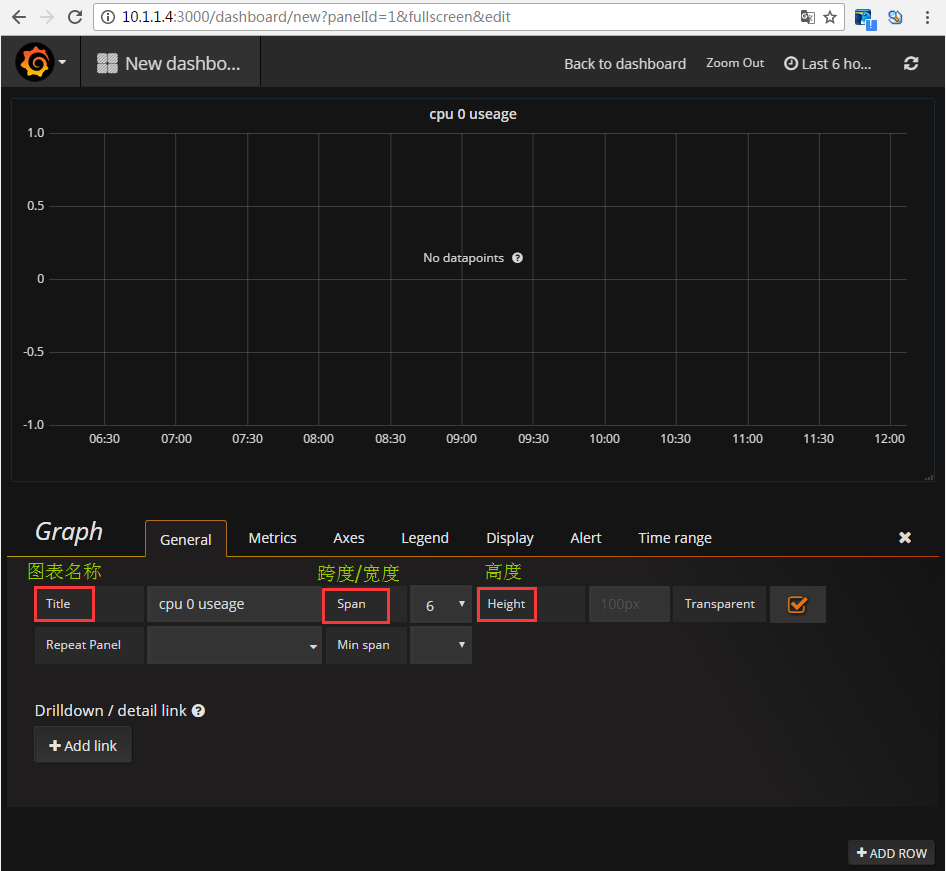
本文档简化了配置，collectd只开启了CPU插件，只是为了演示功能！！！所以grafana也只配置cpu相关参数的图表！！！！！！

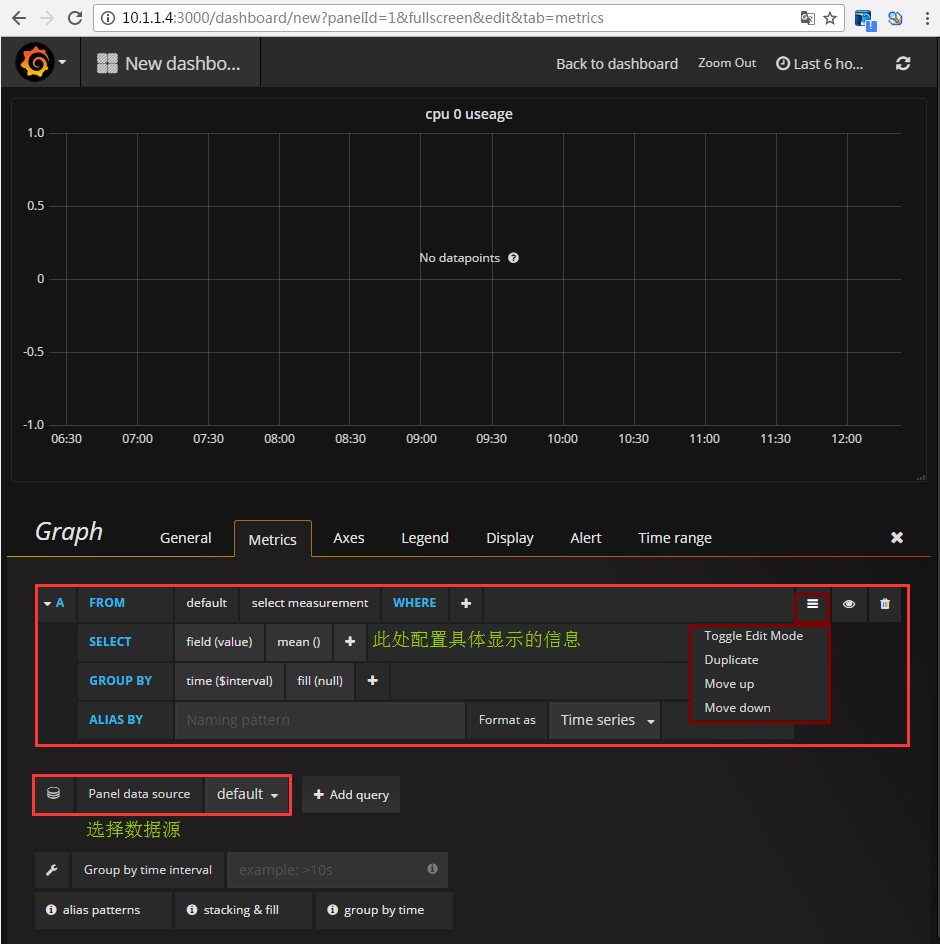


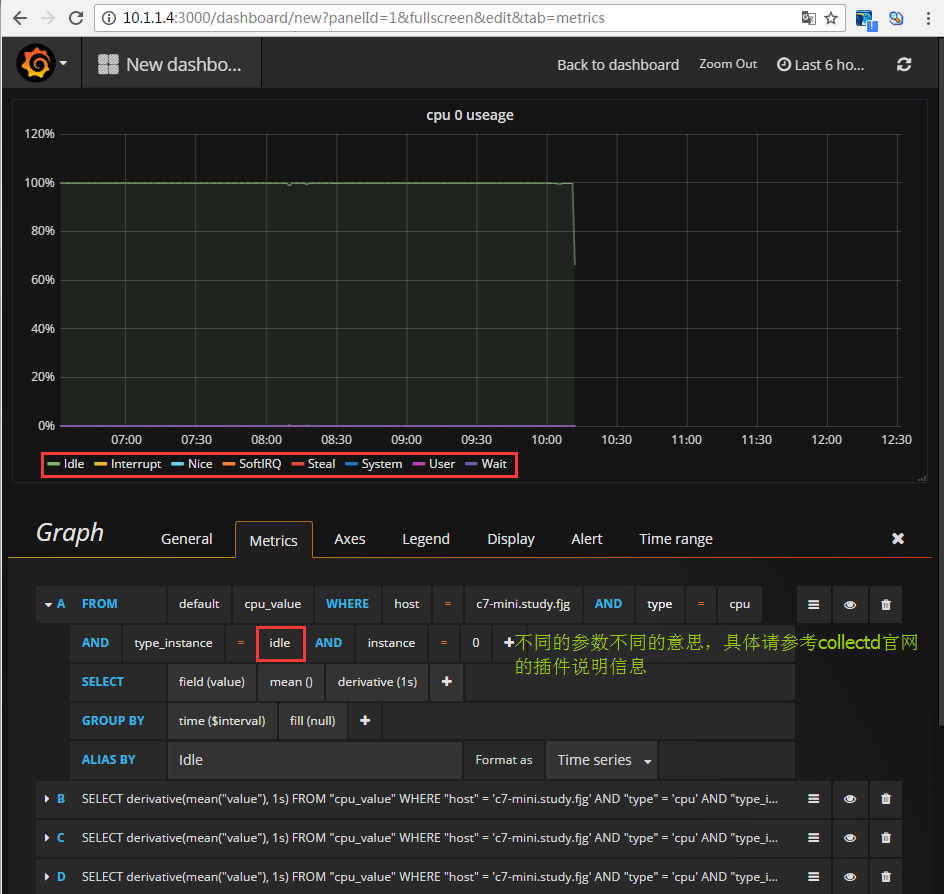


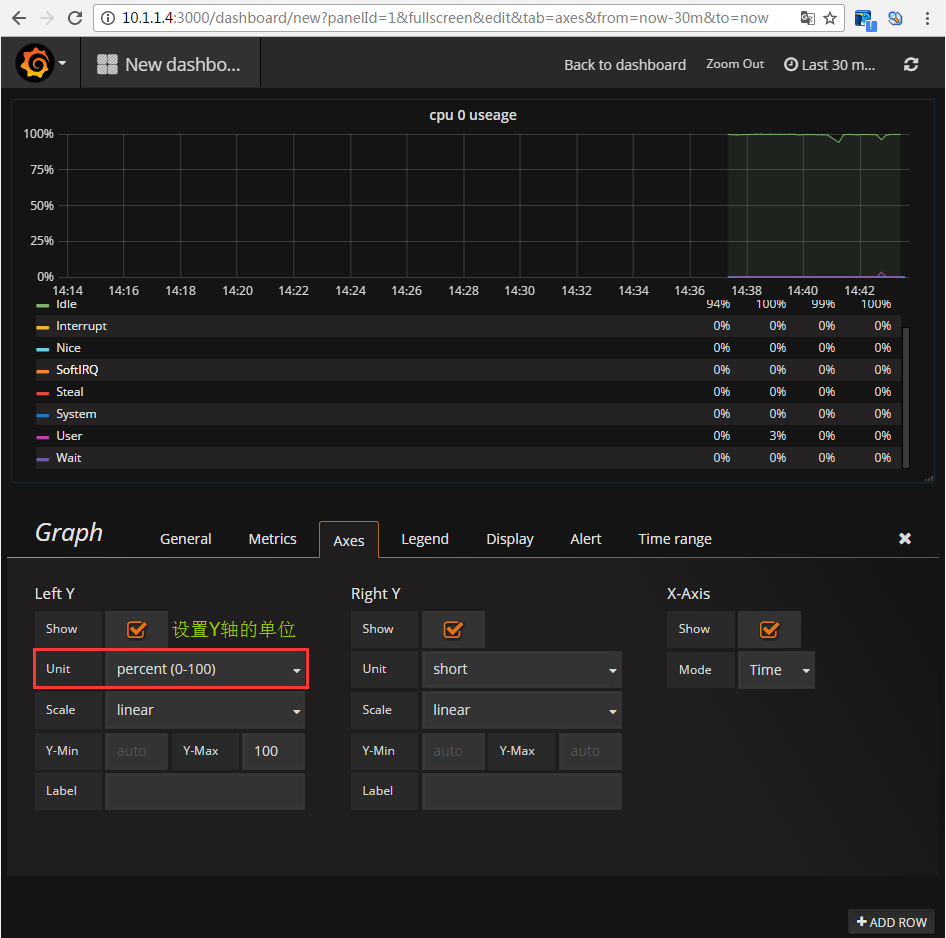


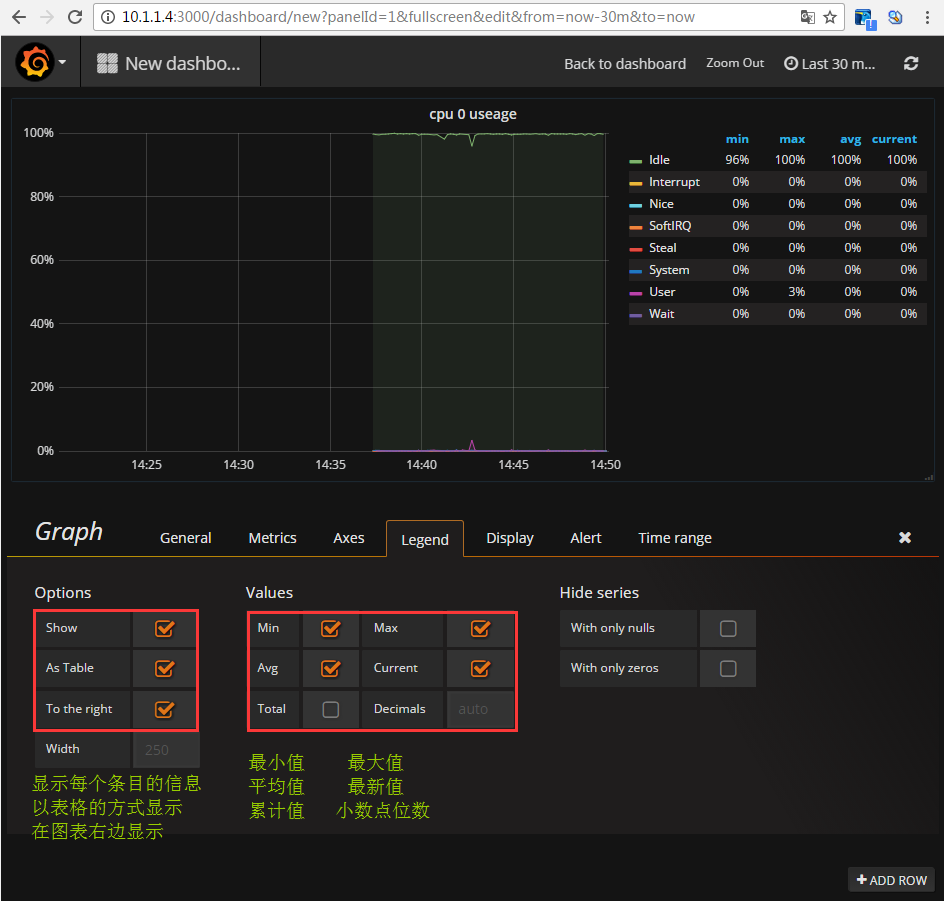




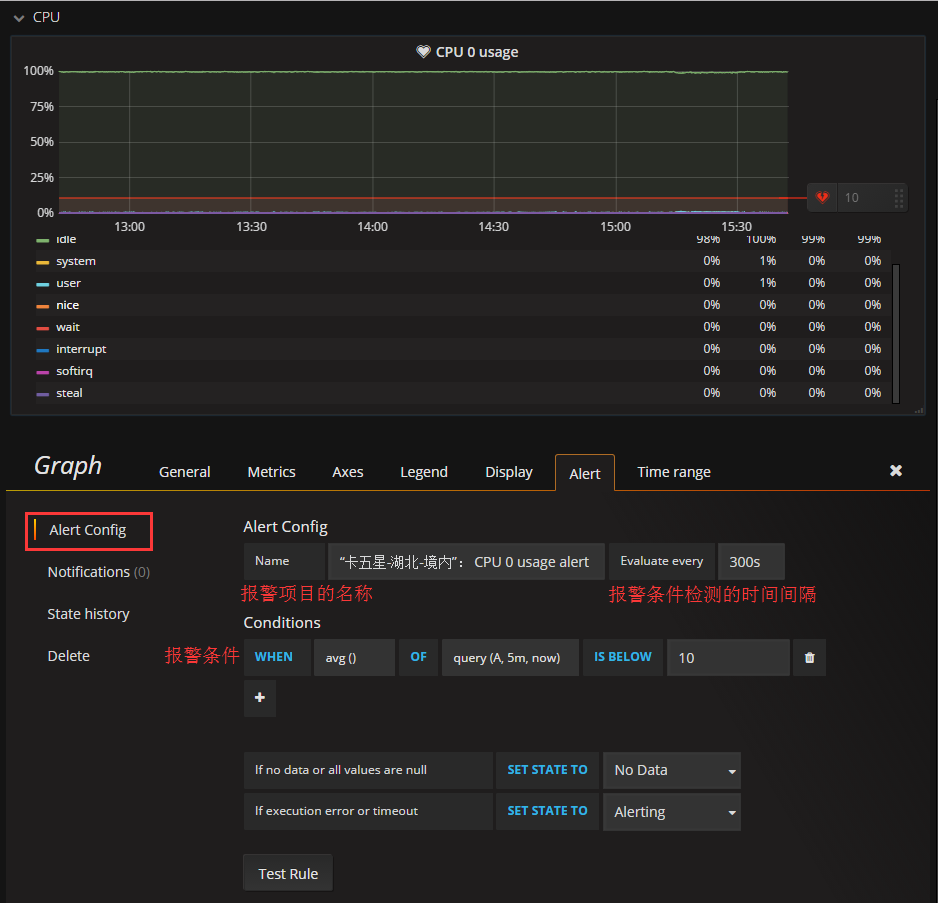


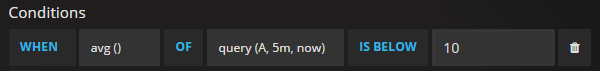






#### 5）配置报警





条件说明：

WHEN：

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| avg() | min() | max() | sum() | count() | last() | median() |
| 平均值 | 最小值 | 最大值 | 总和 | 统计个数 | 最后的值 | 中间值 |

OF：query中的三个参数，A代表的是判断的条目，5m是指计算WHEN后面的函数的时间范围，now是代表当前时间。其中A与“Metrics”中的条目对应



判断依据：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| IS BELOW | IS ABOVE | IS OUTSIDE RANGE | IS WITHIN RANGE | HAS NOVALUE |
| 低于 | 超过 | 在范围外 | 在范围内 | 没有值 |