

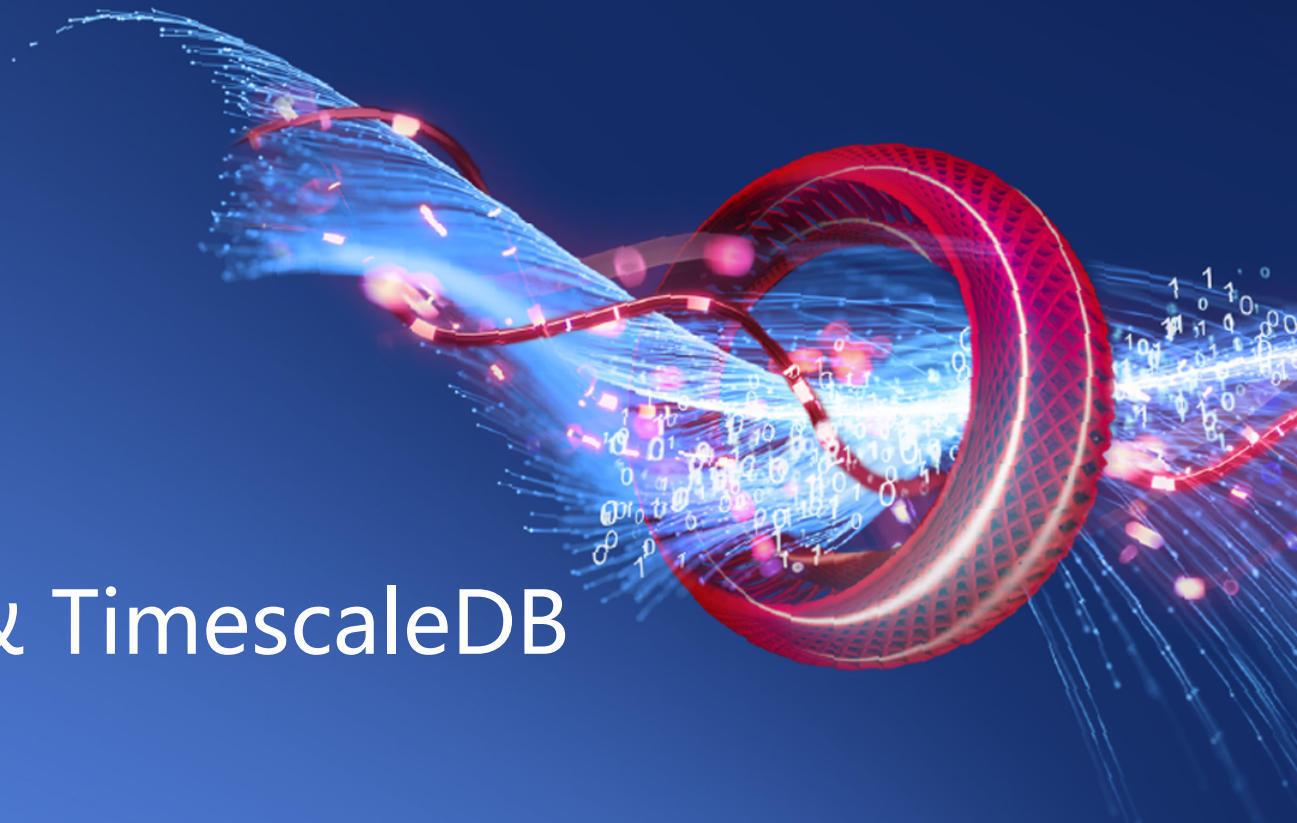
ZABBIX 2020  
Conference  
CHINA

演讲主题

# Zabbix 5.0 & TimescaleDB

演讲嘉宾

张世宏 社区专家



# 目录

01 Zabbix 5.0 新特性

02 TimescaleDB 基础介绍

03 Zabbix 5.0配置使用

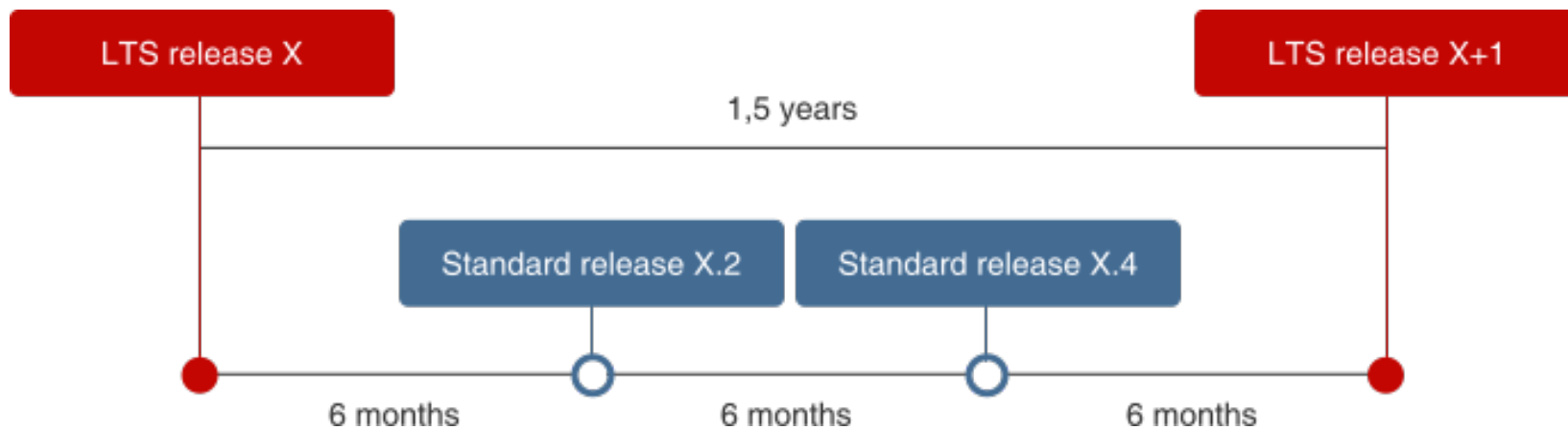
04 Zabbix 5.0数据应用实测

# 01

## Zabbix 5.0 LTS

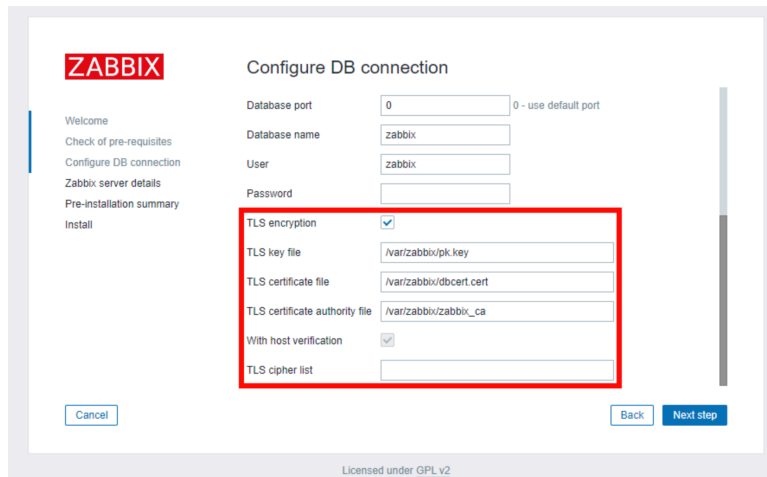
Zabbix 5.0 新特性

# LTS (长期支持版本)

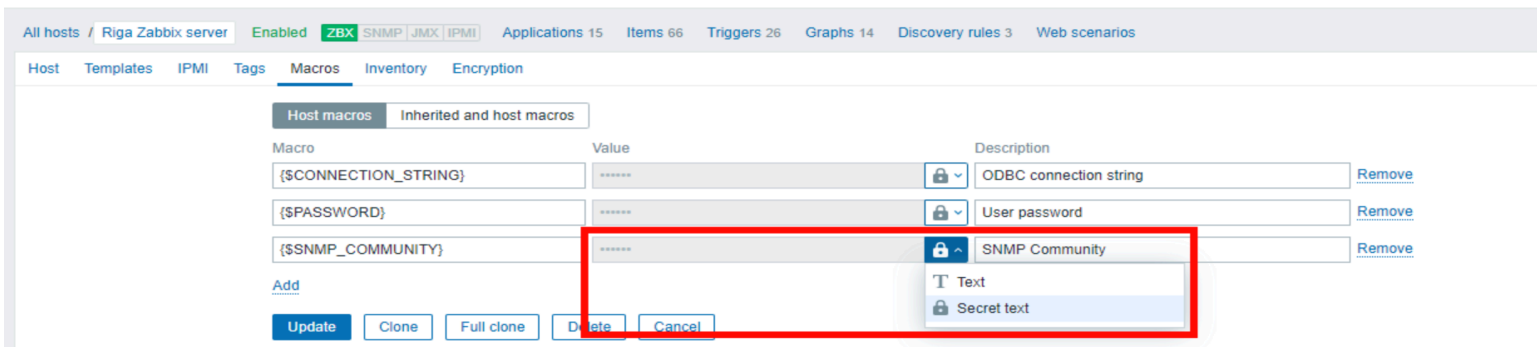


# 安全特性

- 指标采集过滤
- MySQL & PostgreSQL 加密连接
- 用户密码加密SHA256
- 宏字符加密
- .....

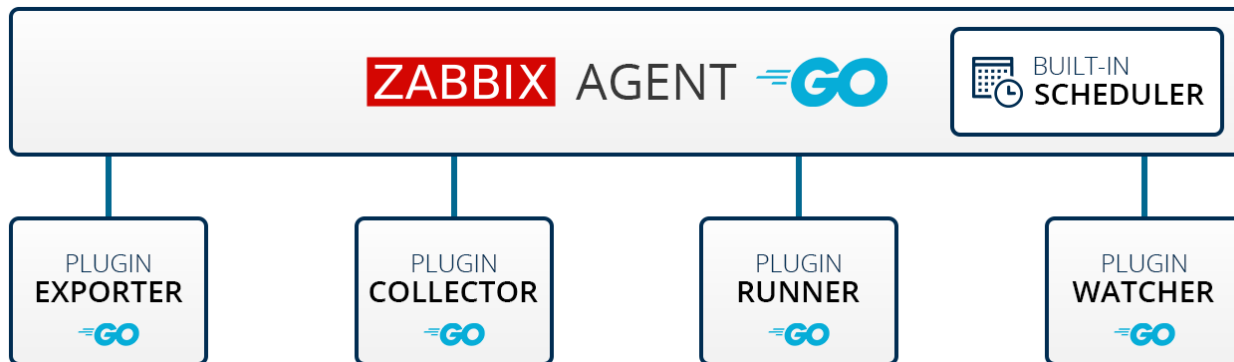


## Hosts



# Agent2 官方支持

- 使用Golang编写
- 强大且易用的插件框架
- 高效的数据采集与传输
- 灵活的调度与采集
- .....



# 性能提升

- TimescaleDB
- UI



Zabbix Server



Older than 7 days,  
Compressed, read-only



**TIME**SCALE



# 02

## TimescaleDB

基本介绍



# 时序数据特点

## 模型

- 序列和数据点组成
- timestamp , value形式

## 查询

- 按照时间范围查询
  - 多维度



## 写入

- 平稳、持续、高并发高吞吐
- 写多读少
- 写入后几乎不更新

## 存储

- 数据量巨大
- 冷热数据明显
- 多精度失效性

# 数据存储



## 关系型

- 通用数据存储
- 完全SQL查询支持
- 保证遵循ACID原则
- 表扩展性较差
- 数据时效性一般

**VS**

## 时序型

- 专为时序数据设计
- 类SQL支持
- 不保证遵循ACID原则
- 结构比较灵活
- 时效性较高



# TimescaleDB



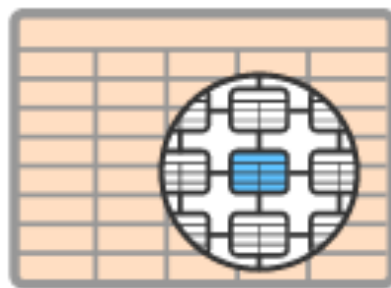
- **TimescaleDB is the leading open-source relational database for time-series data.**
- **Fully managed or self-hosted.**
- **Built on PostgreSQL**

# 基本概念

- **hypertable (超表)**：用于创建表和索引，更改表，插入数据，选择数据的数据的抽象层表
- **Chunks**：超级表会自动拆分为多个块；每个块对应一个特定的时间间隔和分区键空间的一个区域



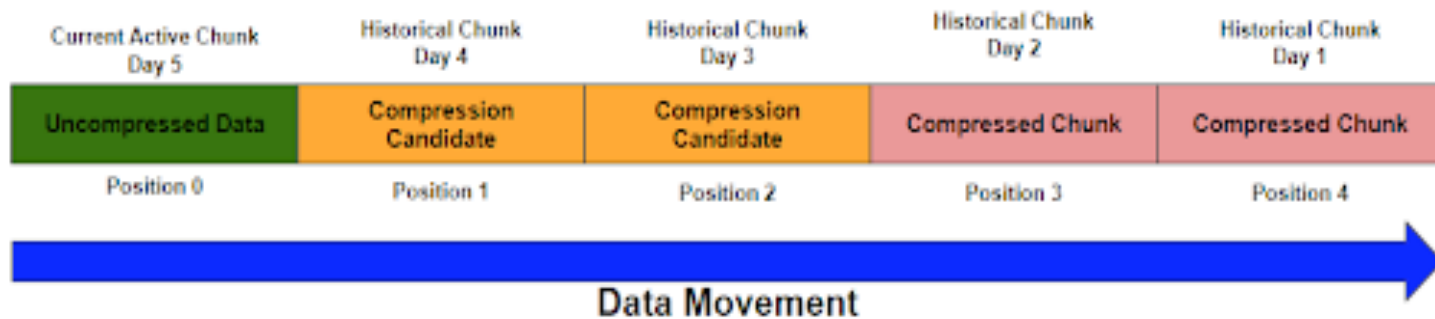
Hypertable



Chunk

# 主要特性

- **数据压缩**：数据按列压缩，节省90%存储空间
- **自动分片**：自动分片（按时间、空间自动分片(chunk)）



# 03

## 配置使用

Zabbix 5.0配置使用TimescaleDB

# 环境介绍

- Centos 7.8 x86\_64
- PostgreSQL 12.3
- TimescaleDB 1.7.2
- Zabbix server 5.0.1



# 安装PostgreSQL

## #安装pg源

```
yum install https://download.postgresql.org/pub/repos/yum/reporgms/EL-7-x86\_64/pgdg-redhat-repo-latest.noarch.rpm
```

## #安装PG

```
yum install postgresql12-server -y
```

## #初始化数据库

```
/usr/pgsql-12/bin/postgresql-12-setup initdb
```

## #配置监听 /var/lib/pgsql/12/data/postgresql.conf

```
listen_addresses = '*'
```

```
port = 5432
```

```
max_connections = 500
```

## #配置认证 /var/lib/pgsql/12/data/pg\_hba.conf

```
host zabbix zabbix 0.0.0.0/0 md5
```

## # 启动

```
systemctl enable --now postgresql-12
```

# 安装TimescaleDB

## #安装timescaledb源

```
tee /etc/yum.repos.d/timescale_timescaledb.repo <<EOL
[timescale_timescaledb]
name=timescale_timescaledb
baseurl=https://packagecloud.io/timescale/timescaledb/el/7/\$basearch
repo_gpgcheck=1
gpgcheck=0
enabled=1
gpgkey=https://packagecloud.io/timescale/timescaledb/gpgkey
sslverify=1
sslcacert=/etc/pki/tls/certs/ca-bundle.crt
metadata_expire=300
EOL
yum update -y
```

## #安装timescaledb

```
yum install -y timescaledb-postgresql-12
```

## #初始化配置

```
timescaledb-tune --pg-config=/usr/pgsql-12/bin/pg_config
```

## #重启pg

```
systemctl restart postgresql-12
```

# Zabbix数据库准备

## #建立zabbix用户

```
sudo -u postgres createuser --pwprompt zabbix
```

```
sudo -u postgres createdb -O zabbix zabbix
```

## #开启timescaledb

```
echo "CREATE EXTENSION IF NOT EXISTS timescaledb CASCADE;" | sudo -u postgres psql zabbix
```

## #导入基础SQL

```
cat database/postgresql/schema.sql | sudo -u zabbix psql zabbix
```

```
cat database/postgresql/images.sql | sudo -u zabbix psql zabbix
```

```
cat database/postgresql/data.sql | sudo -u zabbix psql zabbix
```

## #导入timescaledb

```
cat database/postgresql/timescaledb.sql | sudo -u zabbix psql zabbix
```

# timescaledb.sql

```
SELECT create_hypertable('history', 'clock', chunk_time_interval => 86400, migrate_data => true);
```

```
SELECT create_hypertable('history_uint', 'clock', chunk_time_interval => 86400, migrate_data => true);
```

```
SELECT create_hypertable('history_log', 'clock', chunk_time_interval => 86400, migrate_data => true);
```

```
SELECT create_hypertable('history_text', 'clock', chunk_time_interval => 86400, migrate_data => true);
```

```
SELECT create_hypertable('history_str', 'clock', chunk_time_interval => 86400, migrate_data => true);
```

```
SELECT create_hypertable('trends', 'clock', chunk_time_interval => 2592000, migrate_data => true);
```

```
SELECT create_hypertable('trends_uint', 'clock', chunk_time_interval => 2592000, migrate_data => true);
```

```
UPDATE config SET db_extension='timescaledb',hk_history_global=1,hk_trends_global=1;
```

```
UPDATE config SET compression_status=1,compress_older='7d';
```

# Zabbix 配置

- Administration ^
  - General
  - Proxies
  - Authentication
  - User groups
  - Users
  - Media types
  - Scripts
  - Queue
- Support
- Share
- Help

Enable internal housekeeping   
\* Data storage period

History  
Enable internal housekeeping   
Override item history period   
\* Data storage period

Trends  
Enable internal housekeeping   
Override item trend period   
\* Data storage period

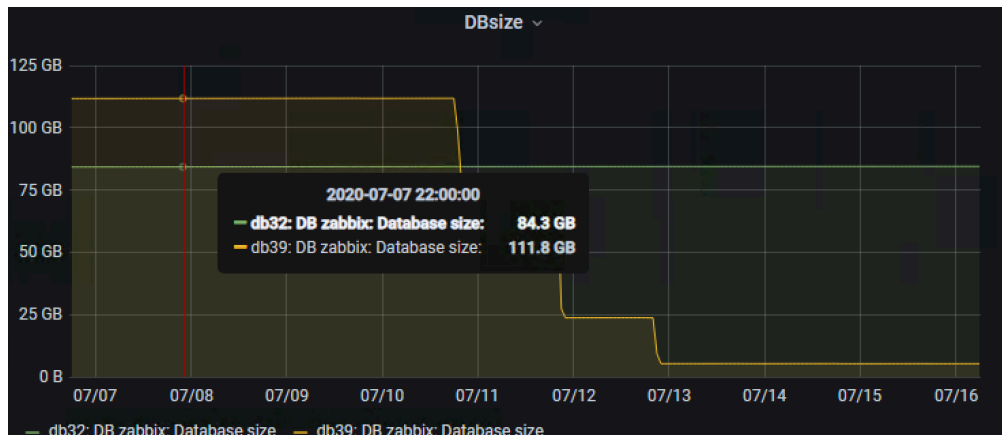
History and trends compression  
Enable compression   
\* Compress records older than

# 04

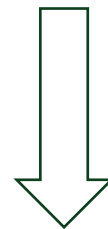
## 数据应用实测



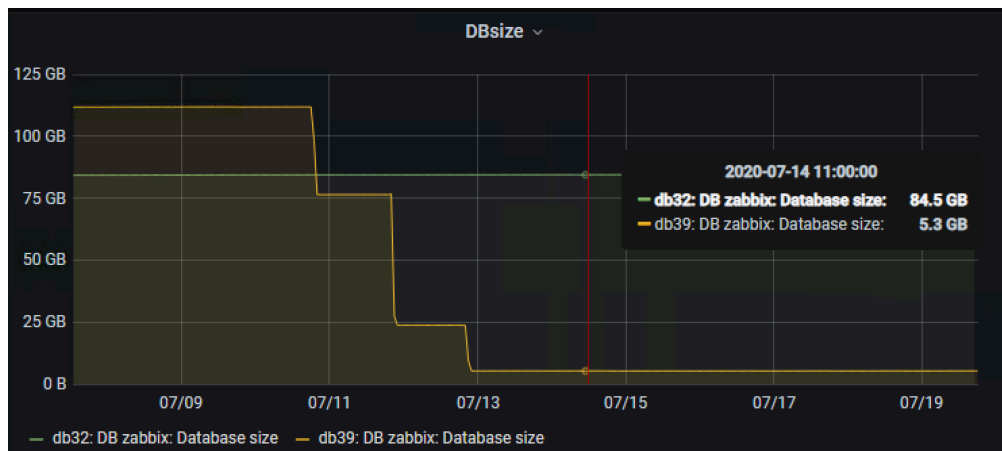
# 数据压缩



原数据大小：118G



节省**95%**存储空间



压缩后数据大小：5.3G



# Housekeeper

```
1498:20200828:184315.845 executing housekeeper  
1498:20200828:184321.063 housekeeper [deleted 19799 hist/trends, 0 items/triggers, 0 events, 1  
problems, 0 sessions, 0 alarms, 0 audit, 0 records in 5.207610 sec, idle for 1 hour(s)]  
1498:20200828:194321.392 executing housekeeper  
1498:20200828:194325.419 housekeeper [deleted 19802 hist/trends, 0 items/triggers, 0 events, 1  
problems, 0 sessions, 0 alarms, 0 audit, 0 records in 4.017559 sec, idle for 1 hour(s)]  
1498:20200828:204325.750 executing housekeeper  
1498:20200828:204327.592 housekeeper [deleted 19798 hist/trends, 0 items/triggers, 0 events, 0  
problems, 0 sessions, 0 alarms, 0 audit, 0 records in 1.833124 sec, idle for 1 hour(s)]
```



```
1502:20200828:172754.834 housekeeper [deleted 0 hist/trends, 0 items/triggers, 0 events, 0 pro  
blems, 0 sessions, 0 alarms, 0 audit, 0 records in 0.186247 sec, idle for 1 hour(s)]  
1502:20200828:182755.189 executing housekeeper  
1502:20200828:182755.415 housekeeper [deleted 0 hist/trends, 0 items/triggers, 0 events, 0 pro  
blems, 0 sessions, 0 alarms, 0 audit, 0 records in 0.178660 sec, idle for 1 hour(s)]  
1502:20200828:192755.763 executing housekeeper  
1502:20200828:192756.030 housekeeper [deleted 0 hist/trends, 0 items/triggers, 0 events, 0 pro  
blems, 0 sessions, 0 alarms, 0 audit, 0 records in 0.189049 sec, idle for 1 hour(s)]
```

# Chunk

- hyper\_1\_389\_chunk
- hyper\_1\_397\_chunk
- hyper\_1\_405\_chunk
- hyper\_1\_411\_chunk
- hyper\_1\_419\_chunk
- hyper\_1\_427\_chunk
- hyper\_1\_435\_chunk
- hyper\_1\_443\_chunk
- hyper\_2\_387\_chunk
- hyper\_2\_395\_chunk
- hyper\_2\_403\_chunk
- hyper\_2\_412\_chunk
- hyper\_2\_420\_chunk
- hyper\_2\_428\_chunk
- hyper\_2\_436\_chunk
- hyper\_2\_444\_chunk
- hyper\_4\_388\_chunk
- hyper\_4\_396\_chunk
- hyper\_4\_404\_chunk
- hyper\_4\_413\_chunk
- hyper\_4\_421\_chunk
- hyper\_4\_429\_chunk
- hyper\_4\_437\_chunk
- hyper\_4\_445\_chunk
- hyper\_5\_390\_chunk
- hyper\_5\_398\_chunk
- hyper\_5\_406\_chunk
- hyper\_5\_414\_chunk
- hyper\_5\_422\_chunk
- hyper\_5\_430\_chunk
- hyper\_5\_438\_chunk
- hyper\_5\_446\_chunk
- hyper\_6\_3\_chunk
- hyper\_6\_32\_chunk
- hyper\_6\_268\_chunk
- hyper\_7\_4\_chunk
- hyper\_7\_31\_chunk
- hyper\_7\_267\_chunk
- bgw\_job\_stat

对象 < bgw\_job\_s... compress... compress... hyper\_6\_3

开始事务 文本 筛选 排序 导入 导出

itemid	clock	value	ns
31095	1598572800	0	661758160
31100	1598572800	7.083228	662853268
31090	1598572800	0.113838	663330142
31155	1598572800	14.678486	663471184
31105	1598572800	8523.65785833211	663942819
31096	1598572801	0	664912208
31111	1598572801	100	665856811
31101	1598572801	1.591652	667428732
31106	1598572801	13.913633000000004	677455840
31156	1598572801	99.693832	681252588
36315	1598572801	0	700825451
36316	1598572801	1132.4621446399408	700825451
36317	1598572801	4624.295039303403	700825451
36318	1598572801	2762.6087203227794	700825451
36319	1598572801	0.03316238087908697	700825451
36320	1598572801	25.966144228325096	700825451
36321	1598572801	0.13264952351634787	700825451
36310	1598572801	75.90868983223007	700825451
36311	1598572801	0	700825451
36309	1598572801	42765.84159548088	700825451
36312	1598572801	0	700825451
31102	1598572802	91.034803	682096172
31118	1598572802	8.965197000000003	682096172
29162	1598572802	0.307062	682802617
31097	1598572802	0.067455	683897225
31157	1598572802	99.93763	685243663
31144	1598572802	0	686172810
31146	1598572802	0.016669773016025805	686172810
31142	1598572802	0	686172810
31143	1598572802	10.716282653159446	686172810
31145	1598572802	0.016669773016025805	686172810
31147	1598572802	1.1708531046970507	686172810

# 压缩

- hyper\_1\_441\_chunk
- hyper\_1\_435\_chunk
- hyper\_1\_443\_chunk
- hyper\_2\_387\_chunk
- hyper\_2\_395\_chunk
- hyper\_2\_403\_chunk
- hyper\_2\_412\_chunk
- hyper\_2\_420\_chunk
- hyper\_2\_428\_chunk
- hyper\_2\_436\_chunk
- hyper\_2\_444\_chunk
- hyper\_4\_388\_chunk
- hyper\_4\_396\_chunk
- hyper\_4\_404\_chunk
- hyper\_4\_413\_chunk
- hyper\_4\_421\_chunk
- hyper\_4\_429\_chunk
- hyper\_4\_437\_chunk
- hyper\_4\_445\_chunk
- hyper\_5\_390\_chunk
- hyper\_5\_398\_chunk
- hyper\_5\_406\_chunk
- hyper\_5\_414\_chunk
- hyper\_5\_422\_chunk
- hyper\_5\_430\_chunk
- hyper\_5\_438\_chunk
- hyper\_5\_446\_chunk
- hyper\_6\_3\_chunk
- hyper\_6\_32\_chunk
- hyper\_6\_268\_chunk
- hyper\_7\_4\_chunk
- hyper\_7\_31\_chunk
- hyper\_7\_267\_chunk
- bgw\_job\_stat
- bgw\_policy\_chunk\_stats
- compress\_hyper\_13\_81\_chunk
- compress\_hyper\_13\_325\_chunk
- compress\_hyper\_14\_82\_chunk
- compress\_hyper\_14\_326\_chunk

itemid	clock	num	value_min	value_avg	value_max	_ts_meta_count
23271	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAABgAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
23272	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
23287	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
23662	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
28249	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
28534	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29161	BAAAAAAAAXwNykAAAAA/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29178	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29179	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29180	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29181	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29185	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29186	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29189	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29190	BAAAAAAAAXwNmoAAAAA/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29191	BAAAAAAAAXwNmoAAAAA/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29192	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29193	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
29557	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30988	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30989	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30990	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30991	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30996	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30997	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30998	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
30999	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
31000	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
31001	BAAAAAAAAXwOs8AAAAA/ BAAAAAAAAAAAAAPAAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
31025	BAAAAAAAAXvsssAAAAAB/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
31026	BAAAAAAAAXvsssAAAAAB/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13
31027	BAAAAAAAAXvsssAAAAAB/ BAAAAAAAAAAAAAQAAAA/ AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1AQBwZ19jYXRhbG9nAGS1					13

# 联系我们

Contact us

Zabbix 中国致力于为国内用户提供培训、咨询、以及其他的专业技术支持。也为国内的用户搭建交流学习的平台。



138-1772-0274



china@zabbix.com



www.grandage.cn  
www.zabbix.com/cn



上海市徐汇区虹梅路1905号



Zabbix开源社区



Zabbix中国



Zabbix\_China



Zabbix\_team



Zabbix 开源社区



加入技术交流群

ZABBIX 2020  
Conference  
CHINA

THANK YOU 😊

