

**5.5**



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- Tagdata : Rollup Partition
- Tagdata : Join
- Tagdata : Predicate
- Tagdata : APPEND TAGNAME
- Tagdata : INSERT INTO Bind
- DURATION Bind
- Disk Full
- Trace Log Level
- Tag Analyzer : X
- Tag Analyzer : Tag Series
- Aggregate Function : FIRST/LAST
- DELETE Log : DELETE
- CLI : Array Binding
- Cluster : Coordinator Role
- Cluster :

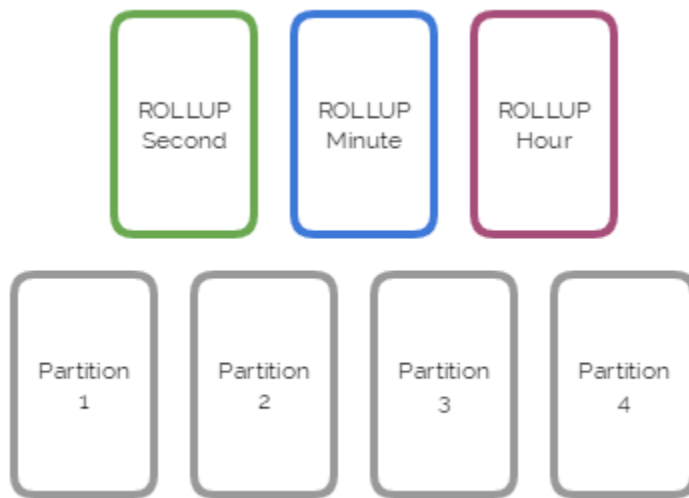
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- Tagdata : ROLLUP\_ENABLE
- CPU\_AFFINITY\_COUNT
- DELETE
- Tagdata : TAGNAME UPDATE
- Tagdata : DISK\_KEYVALUE\_DELETE\_LOCKFREE
- DATE\_TRUNC()
- Cluster Edition : DDL , Cluster
- Explain
- 
- SYS

## Tagdata : Rollup Partition

Tagdata Rollup Partition Log Table Type . Partition Log Table .

5.5 Rollup Partition Tagdata Partition Table Type , CPU/ !



```
SELECT pd.start_time, pd.end_time, td.  
time, pd.name  
FROM process_data pd, tag td  
WHERE pd.name = td.name  
AND td.time BETWEEN pd.start_time AND pd.  
end_time  
AND td.name = '1';
```

## Tagdata : Join

Tagdata , .

, Join .TAGNAME TAGTIME Join , Join .

## Tagdata : Predicate

```
Tagdata SELECT
TAGNAME Column = ? TAGTIME .
, Tagdata Predicate . SELECT !
```

```
SELECT * FROM tag WHERE name LIKE 'TAG!%';
```

```
CREATE TAGDATA TABLE TAG (name VARCHAR
(20) PRIMARY KEY,
                                time DATETIME
BASETIME,
                                value DOUBLE
SUMMARIZED);
INSERT INTO TAG METADATA VALUES ('TAG-A');
-- APPEND ,
-- TAG-B .
-- ('TAG-B', '2019-03-01 01:23:45',
36.5)
```

## Tagdata : APPEND TAGNAME

```
TAGDATA TABLE APPEND , TAGNAME TAGNAME Tag APPEND .
Property TAGDATA_AUTO_NAME_INSERT_IN_APPEND , 1 () .
```

```
APPEND , INSERT .
```

## Tagdata : INSERT INTO Bind

```
CLI/ODBC Tagdata , Bind Variable .
5.5 INSERT INTO Bind Variable Tagdata .
```

```

if (SQLPrepare(sStmt,
    (SQLCHAR *)"INSERT INTO TAG VALUES (?, '2010-01-01', 1.0)",
    SQL_NTS) == SQL_ERROR) {
    printf("Prepare error\n");
}

if (SQLBindParameter(sStmt,
    1,
    SQL_PARAM_INPUT,
    SQL_C_CHAR,
    SQL_VARCHAR,
    0,
    0,
    tagnameData,
    0,
    &tagnameDataSize) == SQL_ERROR) {
    printf("Bind error on tag name");
}

```

```

if (SQLPrepare(sStmt,
    (SQLCHAR *)"SELECT * FROM tabl
DURATION ? SECOND",
    SQL_NTS) == SQL_ERROR) {
    printf("Prepare error\n");
}

if (SQLBindParameter(sStmt,
    1,
    SQL_PARAM_INPUT,
    SQL_C_UBIGINT,
    SQL_INTEGER,
    0,
    0,
    &sSecond,
    0,
    NULL) ==
SQL_ERROR) {
    printf("Bind error on duration
second");
}

```

## DURATION Bind

CLI/ODBC SELECT , DURATION Bind .

5.5 DURATION Bind Variable . , SELECT .

## Disk Full

Property **DISK\_USED\_RATIO\_CAP**, 0 () .

- Property, (%) .

- Property , .  
( .)
- INSERT/APPEND , .
- \$MACHBASE\_HOME/trc machbase.trc ,  
Property .
- \$MACHBASE\_HOME/trc alert.trc ,  
Property .

```
$ cat alert-2018_12_19_18_21_59.trc

[2018-12-19 18:12:51]
[WARN] Storage space exhausted...
      1019Giga, 476Mega, 376832 bytes total.
      346Giga, 643Mega, 421888 bytes used.
      (34.0%) used, (66.0%) free, (34.0%) cap.

[2018-12-19 18:12:55]
[INFO] Storage space secured...
      1019Giga, 476Mega, 376832 bytes total.
      337Giga, 295Mega, 339968 bytes used.
      (33.1%) used, (66.9%) free, (34.0%) cap.

[2018-12-19 18:21:59]
[STARTUP]
```

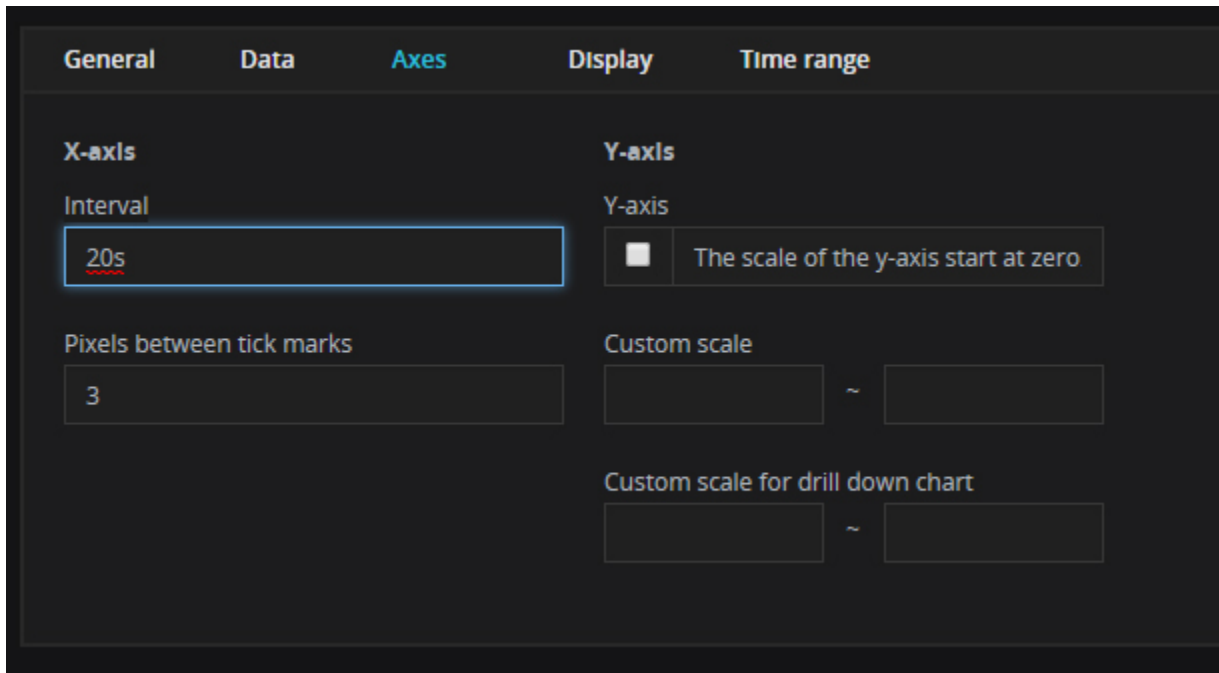
## Trace Log Level

\$MACHBASE\_HOME/trc/machbase.trc Property .

Property **TRACE\_LOG\_LEVEL** , 0.

- Level 0 :
- Level 1 : Level 0 + Cluster Edition
- Level 2 : Level 1 + / (SELECT/APPEND/DML) + /

```
[2019-02-19 18:45:04 P-19295 T-139902498887424][INFO] Session is opened (Client IP : 192.168.0.31)
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (PREPARE): 0.173(ms) [insert into tag
metadata values ('TAG!_1', 'this is first!', 10, '192.168.0.1', '2010-01-01')]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (EXECUTE): 8.986(ms) [insert into tag
metadata values ('TAG!_1', 'this is first!', 10, '192.168.0.1', '2010-01-01')]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (PREPARE): 0.094(ms) [insert into tag
metadata values ('TAG!_2', 'this is second.', 20, '192.168.1.20', '2009-01-02')]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (EXECUTE): 9.128(ms) [insert into tag
metadata values ('TAG!_2', 'this is second.', 20, '192.168.1.20', '2009-01-02')]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (PREPARE): 0.093(ms) [insert into tag
metadata values ('TAG!_4', 'this is fourth?', 40, null, '2008-01-03 12:00:00')]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (EXECUTE): 9.223(ms) [insert into tag
metadata values ('TAG!_4', 'this is fourth?', 40, null, '2008-01-03 12:00:00')]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (PREPARE): 0.105(ms) [insert into tag
metadata values ('TAG!_5', null, 50, '192.168.2.50', null)]
[2019-02-19 18:45:05 P-19295 T-139902498887424][MM] Elapsed time (EXECUTE): 9.167(ms) [insert into tag
metadata values ('TAG!_5', null, 50, '192.168.2.50', null)]
[2019-02-19 18:45:05 P-19295 T-139902375159552][INFO] Session is opened (Client IP : 192.168.0.31)
[2019-02-19 18:45:05 P-19295 T-139902375159552][MM] Append Open. (TAG)
[2019-02-19 18:45:05 P-19295 T-139902375159552][MM] Append Close. (TAG)
[2019-02-19 18:45:05 P-19295 T-139902375159552][OK] Service Thread Finished !!
[2019-02-19 18:45:05 P-19295 T-139902375159552][INFO] Session is closed (Client IP : 192.168.0.31)
```



## Tag Analyzer : X

Zoom X , .

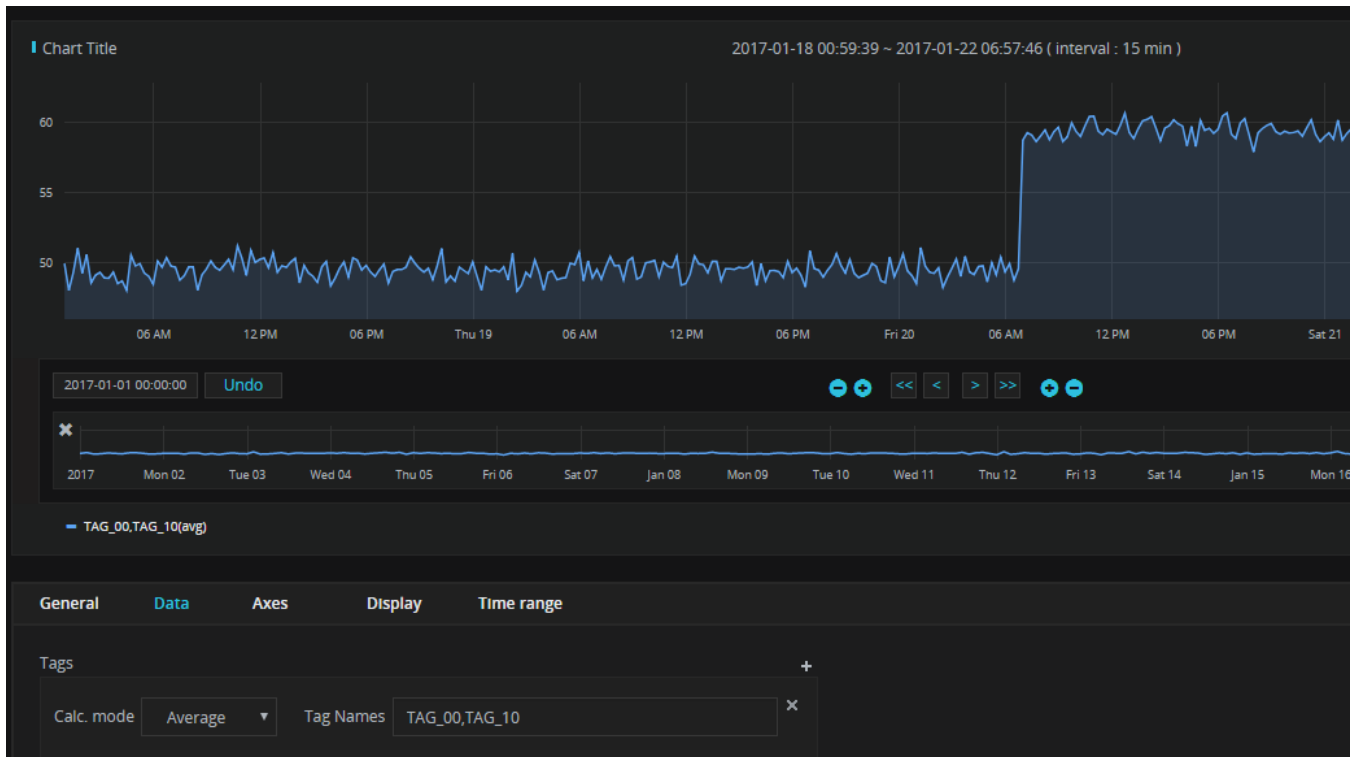
Axes > X-axis Interval .

## Tag Analyzer : Tag Series

TAG-A 10 11, TAG-B 11 12 , .

5.5 Tag Analyzer .

Data > Tags . , .



```
-- _arrival_time    il
select first(_arrival_time, il) from t1;

-- _arrival_time    il ,
-- _arrival_time    il
select first(_arrival_time, il), last
(_arrival_time, il) from t1;
```

## Aggregate Function : FIRST/LAST

SELECT GROUP BY Group, ( ) .  
 , ( ) .

## DELETE Log : DELETE

CREATE TABLE , DELETE .

- ' ', DELETE .
- ' ', DELETE .
- , trace log .

```
-- ' ' .
-- >> 1 ,
-- 2 .
CREATE TABLE t1 (...) KEEP 2 DAY AFTER APPEND INTERVAL 1 HOUR;
```



```

// Set the SQL_ATTR_PARAM_BIND_TYPE
statement attribute to use
// column-wise binding.
SQLSetStmtAttr(hstmt,
SQL_ATTR_PARAM_BIND_TYPE,
SQL_PARAM_BIND_BY_COLUMN, 0);

// Specify the number of elements in each
parameter array.
SQLSetStmtAttr(hstmt,
SQL_ATTR_PARAMSET_SIZE, ARRAY_SIZE, 0);

// Specify an array in which to return the
status of each set of
// parameters.
SQLSetStmtAttr(hstmt,
SQL_ATTR_PARAM_STATUS_PTR,
ParamStatusArray, 0);

// Specify an SQLINTEGER value in which to
return the number of sets of
// parameters processed.
SQLSetStmtAttr(hstmt,
SQL_ATTR_PARAMS_PROCESSED_PTR,
&ParamsProcessed, 0);

// Bind the parameters in column-wise
fashion.
SQLBindParameter(hstmt, 1, SQL_PARAM_INPUT,
SQL_C_ULONG, SQL_INTEGER, 5, 0,
PartIDArray, 0,
PartIDIndArray);
SQLBindParameter(hstmt, 2, SQL_PARAM_INPUT,
SQL_C_CHAR, SQL_CHAR, DESC_LEN - 1, 0,
DescArray, DESC_LEN,
DescLenOrIndArray);
SQLBindParameter(hstmt, 3, SQL_PARAM_INPUT,
SQL_C_FLOAT, SQL_REAL, 7, 0,
PriceArray, 0,
PriceIndArray);

```

## CLI : Array Binding

```
SQLBindParameter() .
```

```
Bind - Execute .
```

```
, .
```

```
(Column-wise binding) .
```

## Cluster : Coordinator Role

```
Coordinator Primary/Secondary , .
```

```
5.5, Coordinator .
```

```
Primary Secondary Primary , Primary Secondary .
```



```

$ machcoordinatoradmin --get-host-resource -i
-----
Machbase Coordinator Administration Tool
Release Version - x.x.x.official
Copyright 2014, MACHBASE Corp. or its
subsidiaries
All Rights Reserved
-----
Host Name : 192.168.0.32
CPU Info :
  Model Name      : Intel(R) Xeon(R)
CPU E3-1231 v3 @ 3.40GHz
  Number of CPUs  : 8
  Number of CPU Cores : 4
  CPU Utilization : 18.5%
  CPU IOWait Ratio : 0.0%
Memory Info :
  Physical Memory Utilization : 94.2%
  Virtual Memory Utilization  : 85.1%
Network Info :
  Receive Bytes(per second)   : 35827
  Receive Packets(per second) : 250
  Transmit Bytes(per second)  : 35716
  Transmit Packets(per second): 248
Disk Info :
  /dev/sdal : 87.0%
  |-> 192.168.0.32:32110 /home/cumulus
/work/nfx/test/nodes/coordinator1
  |-> 192.168.0.32:32310 /home/cumulus
/work/nfx/test/nodes/broker1
  |-> 192.168.0.32:32410 /home/cumulus
/work/nfx/test/nodes/active1_1
  |-> 192.168.0.32:32520 /home/cumulus
/work/nfx/test/nodes/active2_2

```

## Cluster :

### 5.5 Cluster Edition Node . . .

- CPU
- Memory
- Network
- Disk

### Coordinator , . . .

- Command-line `machcoordinatoradmin --get-host-resource` (plaintext )
- RESTful API (`/Get-Host-Resource`) (JSON format )

```
# Coordinator host command-line
machcoordinatoradmin --get-host-resource -i

# Coordinator HTTP Admin Host:Port RESTful API
curl http://192.168.0.32:32112/Get-Host-Resource
```

---

## Tagdata : ROLLUP\_ENABLE

**ROLLUP\_ENABLE** Property .  
Tagdata Rollup .

- 1 Rollup , 0 Rollup .  
(Rollup , .)
- 1 .

## CPU\_AFFINITY\_COUNT

**CPU\_AFFINITY\_COUNT** . CPU Core AFFINITY\_COUNT .  
**CPU\_AFFINITY\_BEGIN\_ID** Property , .

Property 0() .

## DELETE

DELETE , DELETE SELECT .  
DELETE , DELETE .

## Tagdata : TAGNAME UPDATE

TAGNAME UPDATE , .

```
UPDATE TAG METADATA SET NAME = 'TAG-AA' WHERE NAME = 'TAG-A';
```

## Tagdata : DISK\_KEYVALUE\_DELETE\_LOCKFREE

**DISK\_KEYVALUE\_DELETE\_LOCKFREE** Property , .

Tagdata Table DELETE , .

- .
- ; .

, DELETE / . (e.g. Batch ) .

, Property DELETE .

- 1 , DELETE .0, DELETE .
- 1. 0 .

## DATE\_TRUNC()

, resolution 45 , 86400 .

<b>second</b>	86400
<b>minute</b>	1440
<b>day</b>	1
<b>month</b>	1
<b>year</b>	1

## Cluster Edition : DDL , Cluster

Node DDL , Cluster .  
DDL , Node Cluster .

Node DDL-incompleted , Remove-Node .

## Explain

SELECT Plan Node explain , Node .

5.5 .

~5.1	5.5
<pre>explain select count(*) from tag; PLAN ----- QPN_NODE_TYPE_PROJ   QPN_NODE_TYPE_TAG_READ (RAW)     QPN_NODE_TYPE_COUNTSTAR</pre>	<pre>explain select count(*) from tag; PLAN ----- PROJECT   TAG READ (RAW)     COUNTSTAR</pre>

**DISK\_USED\_RATIO\_CAP** Property , Fixed table .

Table V\$STORAGE\_USAGE .

```
Mach> SELECT * FROM V$STORAGE_USAGE;
TOTAL_SPACE  USED_SPACE  USED_RATIO  RATIO_CAP
-----
461GB        196GB        42.5806      100
[1] row(s) selected.
Elapsed time: 0.001
Mach>
```

## SYS

SQL (GRANT, REVOKE) , SYS .

5.5 .,SYS .

	<b>SYS</b>	
	O	X

	O	X
machsql show tables		