MySQL sys schema

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MySQL 8.0包括sys模式，这是一组帮助DBA和开发人员解释由性能模式收集的数据的对象。sys模式对象可用于典型的调整和诊断用例。这个模式中的对象包括。

视图，将性能模式的数据总结成更容易理解的形式。

执行诸如性能模式配置和生成诊断报告等操作的存储程序。

查询Performance Schema配置和提供格式化服务的存储函数。

对于新的安装，如果你使用mysqld的-initialize或-initialize-insecure选项，sys模式在数据目录初始化期间被默认安装。如果不希望这样，你可以在初始化后手动删除不需要的sys模式。

如果一个sys模式存在但没有版本视图，MySQL升级程序会产生一个错误，因为假设没有这个视图表示一个用户创建的sys模式。要在这种情况下升级，首先要删除或重命名现有的sys模式。

sys模式对象有一个'mysql.sys'@'localhost'的DEFINER。使用专用的mysql.sys账户可以避免在DBA重命名或删除根账户时发生的问题。

## 28.1 Prerequisites for Using the sys Schema

Before using the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema, the prerequisites described in this section must be satisfied.

Because the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema provides an alternative means of accessing the Performance Schema, the Performance Schema must be enabled for the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema to work. See [Section 27.3, “Performance Schema Startup Configuration”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-startup-configuration).

For full access to the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema, a user must have these privileges:

* [**SELECT**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_select) on all [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) tables and views
* [**EXECUTE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_execute) on all [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) stored procedures and functions
* [**INSERT**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_insert) and [**UPDATE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_update) for the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table, if changes are to be made to it
* Additional privileges for certain [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema stored procedures and functions, as noted in their descriptions (for example, the **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)** procedure)

It is also necessary to have privileges for the objects underlying the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema objects:

* [**SELECT**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_select) on any Performance Schema tables accessed by [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema objects, and [**UPDATE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_update) for any tables to be updated using [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema objects
* [**PROCESS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_process) for the **INFORMATION\_SCHEMA** [**INNODB\_BUFFER\_PAGE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-buffer-page-table) table

Certain Performance Schema instruments and consumers must be enabled and (for instruments) timed to take full advantage of [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema capabilities:

* All **wait** instruments
* All **stage** instruments
* All **statement** instruments
* ***xxx*\_current** and ***xxx*\_history\_long** consumers for all events

You can use the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema itself to enable all of the additional instruments and consumers:

CALL sys.ps\_setup\_enable\_instrument('wait');

CALL sys.ps\_setup\_enable\_instrument('stage');

CALL sys.ps\_setup\_enable\_instrument('statement');

CALL sys.ps\_setup\_enable\_consumer('current');

CALL sys.ps\_setup\_enable\_consumer('history\_long');

**Note**

For many uses of the **sys** schema, the default Performance Schema is sufficient for data collection. Enabling all the instruments and consumers just mentioned has a performance impact, so it is preferable to enable only the additional configuration you need. Also, remember that if you enable additional configuration, you can easily restore the default configuration like this:

CALL sys.ps\_setup\_reset\_to\_default(TRUE);

## 28.2 Using the sys Schema

You can make the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema the default schema so that references to its objects need not be qualified with the schema name:

mysql> **USE sys;**

Database changed

mysql> **SELECT \* FROM version;**

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

| sys\_version | mysql\_version |

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

| 2.0.0 | 8.0.13-debug |

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

(The [**version**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version) view shows the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema and MySQL server versions.)

To access [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema objects while a different schema is the default (or simply to be explicit), qualify object references with the schema name:

mysql> **SELECT \* FROM sys.version;**

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

| sys\_version | mysql\_version |

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

| 2.0.0 | 8.0.13-debug |

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

The **sys** schema contains many views that summarize Performance Schema tables in various ways. Most of these views come in pairs, such that one member of the pair has the same name as the other member, plus a **x$** prefix. For example, the **[host\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-file-io" \o "28.4.3.2 The host_summary_by_file_io and x$host_summary_by_file_io Views)** view summarizes file I/O grouped by host and displays latencies converted from picoseconds to more readable values (with units);

mysql> **SELECT \* FROM sys.host\_summary\_by\_file\_io;**

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

| host | ios | io\_latency |

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

| localhost | 67570 | 5.38 s |

| background | 3468 | 4.18 s |

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

The **[x$host\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-file-io" \o "28.4.3.2 The host_summary_by_file_io and x$host_summary_by_file_io Views)** view summarizes the same data but displays unformatted picosecond latencies:

mysql> **SELECT \* FROM sys.x$host\_summary\_by\_file\_io;**

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

| host | ios | io\_latency |

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

| localhost | 67574 | 5380678125144 |

| background | 3474 | 4758696829416 |

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

The view without the **x$** prefix is intended to provide output that is more user friendly and easier for humans to read. The view with the **x$** prefix that displays the same values in raw form is intended more for use with other tools that perform their own processing on the data. For additional information about the differences between non-**x$** and **x$** views, see [Section 28.4.3, “sys Schema Views”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-views).

To examine [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema object definitions, use the appropriate [**SHOW**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#show) statement or [**INFORMATION\_SCHEMA**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html) query. For example, to examine the definitions of the [**session**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-session) view and **[format\_bytes()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-bytes" \o "28.4.5.3 The format_bytes() Function)** function, use these statements:

mysql> **SHOW CREATE VIEW sys.session;**

mysql> **SHOW CREATE FUNCTION sys.format\_bytes;**

However, those statements display the definitions in relatively unformatted form. To view object definitions with more readable formatting, access the individual .sql files found under the scripts/sys\_schema in MySQL source distributions. Prior to MySQL 8.0.18, the sources are maintained in a separate distribution available from the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema development website at <https://github.com/mysql/mysql-sys>.

Neither **[mysqldump](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\programs.html" \l "mysqldump" \o "4.5.4 mysqldump — A Database Backup Program)** nor **[mysqlpump](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\programs.html" \l "mysqlpump" \o "4.5.6 mysqlpump — A Database Backup Program)** dump the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema by default. To generate a dump file, name the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema explicitly on the command line using either of these commands:

mysqldump --databases --routines sys > sys\_dump.sql

mysqlpump sys > sys\_dump.sql

To reinstall the schema from the dump file, use this command:

mysql < sys\_dump.sql

## 28.3 sys Schema Progress Reporting

The following [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema views provide progress reporting for long-running transactions:

processlist

session

x$processlist

x$session

Assuming that the required instruments and consumers are enabled, the **progress** column of these views shows the percentage of work completed for stages that support progress reporting.

Stage progress reporting requires that the **events\_stages\_current** consumer be enabled, as well as the instruments for which progress information is desired. Instruments for these stages currently support progress reporting:

stage/sql/Copying to tmp table

stage/innodb/alter table (end)

stage/innodb/alter table (flush)

stage/innodb/alter table (insert)

stage/innodb/alter table (log apply index)

stage/innodb/alter table (log apply table)

stage/innodb/alter table (merge sort)

stage/innodb/alter table (read PK and internal sort)

stage/innodb/buffer pool load

For stages that do not support estimated and completed work reporting, or if the required instruments or consumers are not enabled, the **progress** column is **NULL**.

## 28.4 sys Schema Object Reference

[28.4.1 sys Schema Object Index](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-object-index)

[28.4.2 sys Schema Tables and Triggers](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-tables)

[28.4.3 sys Schema Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-views)

[28.4.4 sys Schema Stored Procedures](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-procedures)

[28.4.5 sys Schema Stored Functions](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-functions)

The [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema includes tables and triggers, views, and stored procedures and functions. The following sections provide details for each of these objects.

### 28.4.1 sys Schema Object Index

The following tables list [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema objects and provide a short description of each one.

**Table 28.1 sys Schema Tables and Triggers**

|  |  |
| --- | --- |
| Table or Trigger Name | Description |
| [sys\_config](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config) | [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema configuration options |
| [sys\_config\_insert\_set\_user](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config-insert-set-user) | [**sys\_config**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config) insert trigger |
| [sys\_config\_update\_set\_user](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config-update-set-user) | [**sys\_config**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config) update trigger |

**Table 28.2 sys Schema Views**

|  |  |
| --- | --- |
| View Name | Description |
| [host\_summary](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary), [x$host\_summary](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary) | Statement activity, file I/O, and connections, grouped by host |
| [host\_summary\_by\_file\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io), [x$host\_summary\_by\_file\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io) | File I/O, grouped by host |
| [host\_summary\_by\_file\_io\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io-type), [x$host\_summary\_by\_file\_io\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io-type) | File I/O, grouped by host and event type |
| [host\_summary\_by\_stages](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-stages), [x$host\_summary\_by\_stages](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-stages) | Statement stages, grouped by host |
| [host\_summary\_by\_statement\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-latency), [x$host\_summary\_by\_statement\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-latency) | Statement statistics, grouped by host |
| [host\_summary\_by\_statement\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-type), [x$host\_summary\_by\_statement\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-type) | Statements executed, grouped by host and statement |
| [innodb\_buffer\_stats\_by\_schema](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-schema), [x$innodb\_buffer\_stats\_by\_schema](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-schema) | **InnoDB** buffer information, grouped by schema |
| [innodb\_buffer\_stats\_by\_table](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-table), [x$innodb\_buffer\_stats\_by\_table](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-table) | **InnoDB** buffer information, grouped by schema and table |
| [innodb\_lock\_waits](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-lock-waits), [x$innodb\_lock\_waits](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-lock-waits) | **InnoDB** lock information |
| [io\_by\_thread\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-by-thread-by-latency), [x$io\_by\_thread\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-by-thread-by-latency) | I/O consumers, grouped by thread |
| [io\_global\_by\_file\_by\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-bytes), [x$io\_global\_by\_file\_by\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-bytes) | Global I/O consumers, grouped by file and bytes |
| [io\_global\_by\_file\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-latency), [x$io\_global\_by\_file\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-latency) | Global I/O consumers, grouped by file and latency |
| [io\_global\_by\_wait\_by\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-bytes), [x$io\_global\_by\_wait\_by\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-bytes) | Global I/O consumers, grouped by bytes |
| [io\_global\_by\_wait\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-latency), [x$io\_global\_by\_wait\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-latency) | Global I/O consumers, grouped by latency |
| [latest\_file\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-latest-file-io), [x$latest\_file\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-latest-file-io) | Most recent I/O, grouped by file and thread |
| [memory\_by\_host\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-host-by-current-bytes), [x$memory\_by\_host\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-host-by-current-bytes) | Memory use, grouped by host |
| [memory\_by\_thread\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-thread-by-current-bytes), [x$memory\_by\_thread\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-thread-by-current-bytes) | Memory use, grouped by thread |
| [memory\_by\_user\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-user-by-current-bytes), [x$memory\_by\_user\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-user-by-current-bytes) | Memory use, grouped by user |
| [memory\_global\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-by-current-bytes), [x$memory\_global\_by\_current\_bytes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-by-current-bytes) | Memory use, grouped by allocation type |
| [memory\_global\_total](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-total), [x$memory\_global\_total](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-total) | Total memory use |
| [metrics](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) | Server metrics |
| [processlist](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-processlist), [x$processlist](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-processlist) | Processlist information |
| [ps\_check\_lost\_instrumentation](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-check-lost-instrumentation) | Variables that have lost instruments |
| [schema\_auto\_increment\_columns](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-auto-increment-columns) | **AUTO\_INCREMENT** column information |
| [schema\_index\_statistics](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-index-statistics), [x$schema\_index\_statistics](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-index-statistics) | Index statistics |
| [schema\_object\_overview](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-object-overview) | Types of objects within each schema |
| [schema\_redundant\_indexes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-redundant-indexes) | Duplicate or redundant indexes |
| [schema\_table\_lock\_waits](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-lock-waits), [x$schema\_table\_lock\_waits](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-lock-waits) | Sessions waiting for metadata locks |
| [schema\_table\_statistics](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics), [x$schema\_table\_statistics](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics) | Table statistics |
| [schema\_table\_statistics\_with\_buffer](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics-with-buffer), [x$schema\_table\_statistics\_with\_buffer](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics-with-buffer) | Table statistics, including **InnoDB** buffer pool statistics |
| [schema\_tables\_with\_full\_table\_scans](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-tables-with-full-table-scans), [x$schema\_tables\_with\_full\_table\_scans](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-tables-with-full-table-scans) | Tables being accessed with full scans |
| [schema\_unused\_indexes](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-unused-indexes) | Indexes not in active use |
| [session](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-session), [x$session](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-session" \o "28.4.3.33 The session and x$session Views) | Processlist information for user sessions |
| [session\_ssl\_status](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-session-ssl-status) | Connection SSL information |
| [statement\_analysis](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statement-analysis), [x$statement\_analysis](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statement-analysis) | Statement aggregate statistics |
| [statements\_with\_errors\_or\_warnings](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-errors-or-warnings), [x$statements\_with\_errors\_or\_warnings](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-errors-or-warnings) | Statements that have produced errors or warnings |
| [statements\_with\_full\_table\_scans](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-full-table-scans), [x$statements\_with\_full\_table\_scans](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-full-table-scans) | Statements that have done full table scans |
| [statements\_with\_runtimes\_in\_95th\_percentile](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile), [x$statements\_with\_runtimes\_in\_95th\_percentile](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) | Statements with highest average runtime |
| [statements\_with\_sorting](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-sorting), [x$statements\_with\_sorting](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-sorting) | Statements that performed sorts |
| [statements\_with\_temp\_tables](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-temp-tables), [x$statements\_with\_temp\_tables](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-temp-tables) | Statements that used temporary tables |
| [user\_summary](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary), [x$user\_summary](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary) | User statement and connection activity |
| [user\_summary\_by\_file\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io), [x$user\_summary\_by\_file\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io) | File I/O, grouped by user |
| [user\_summary\_by\_file\_io\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io-type), [x$user\_summary\_by\_file\_io\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io-type) | File I/O, grouped by user and event |
| [user\_summary\_by\_stages](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-stages), [x$user\_summary\_by\_stages](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-stages) | Stage events, grouped by user |
| [user\_summary\_by\_statement\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-latency), [x$user\_summary\_by\_statement\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-latency) | Statement statistics, grouped by user |
| [user\_summary\_by\_statement\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-type), [x$user\_summary\_by\_statement\_type](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-type) | Statements executed, grouped by user and statement |
| [version](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version) | Current [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema and MySQL server versions |
| [wait\_classes\_global\_by\_avg\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-avg-latency), [x$wait\_classes\_global\_by\_avg\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-avg-latency) | Wait class average latency, grouped by event class |
| [wait\_classes\_global\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-latency), [x$wait\_classes\_global\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-latency) | Wait class total latency, grouped by event class |
| [waits\_by\_host\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-host-by-latency), [x$waits\_by\_host\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-host-by-latency) | Wait events, grouped by host and event |
| [waits\_by\_user\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-user-by-latency), [x$waits\_by\_user\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-user-by-latency) | Wait events, grouped by user and event |
| [waits\_global\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-global-by-latency), [x$waits\_global\_by\_latency](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-global-by-latency) | Wait events, grouped by event |
| [x$ps\_digest\_95th\_percentile\_by\_avg\_us](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) | Helper view for 95th-percentile views |
| [x$ps\_digest\_avg\_latency\_distribution](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) | Helper view for 95th-percentile views |
| [x$ps\_schema\_table\_statistics\_io](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics) | Helper view for table-statistics views |
| [x$schema\_flattened\_keys](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-redundant-indexes) | Helper view for **[schema\_redundant\_indexes](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-redundant-indexes" \o "28.4.3.27 The schema_redundant_indexes and x$schema_flattened_keys Views)** |

**Table 28.3 sys Schema Stored Procedures**

| **Procedure Name** | **Description** |
| --- | --- |
| [**create\_synonym\_db()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-create-synonym-db) | Create synonym for schema |
| [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) | Collect system diagnostic information |
| [**execute\_prepared\_stmt()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-execute-prepared-stmt) | Execute prepared statement |
| [**ps\_setup\_disable\_background\_threads()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-background-threads) | Disable background thread instrumentation |
| [**ps\_setup\_disable\_consumer()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-consumer) | Disable consumers |
| [**ps\_setup\_disable\_instrument()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-instrument) | Disable instruments |
| [**ps\_setup\_disable\_thread()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-thread) | Disable instrumentation for thread |
| [**ps\_setup\_enable\_background\_threads()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-background-threads) | Enable background thread instrumentation |
| [**ps\_setup\_enable\_consumer()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-consumer) | Enable consumers |
| [**ps\_setup\_enable\_instrument()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-instrument) | Enable instruments |
| [**ps\_setup\_enable\_thread()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-thread) | Enable instrumentation for thread |
| [**ps\_setup\_reload\_saved()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-reload-saved) | Reload saved Performance Schema configuration |
| [**ps\_setup\_reset\_to\_default()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-reset-to-default) | Reset saved Performance Schema configuration |
| [**ps\_setup\_save()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-save) | Save Performance Schema configuration |
| [**ps\_setup\_show\_disabled()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-disabled) | Display disabled Performance Schema configuration |
| [**ps\_setup\_show\_disabled\_consumers()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-disabled-consumers) | Display disabled Performance Schema consumers |
| [**ps\_setup\_show\_disabled\_instruments()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-disabled-instruments) | Display disabled Performance Schema instruments |
| [**ps\_setup\_show\_enabled()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-enabled) | Display enabled Performance Schema configuration |
| [**ps\_setup\_show\_enabled\_consumers()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-enabled-consumers) | Display enabled Performance Schema consumers |
| [**ps\_setup\_show\_enabled\_instruments()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-enabled-instruments) | Display enabled Performance Schema instruments |
| [**ps\_statement\_avg\_latency\_histogram()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-statement-avg-latency-histogram) | Display statement latency histogram |
| [**ps\_trace\_statement\_digest()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-trace-statement-digest) | Trace Performance Schema instrumentation for digest |
| [**ps\_trace\_thread()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-trace-thread) | Dump Performance Schema data for thread |
| [**ps\_truncate\_all\_tables()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-truncate-all-tables) | Truncate Performance Schema summary tables |
| [**statement\_performance\_analyzer()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statement-performance-analyzer) | Report of statements running on server |
| [**table\_exists()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-table-exists) | Whether a table exists |

**Table 28.4 sys Schema Stored Functions**

| **Function Name** | **Description** |
| --- | --- |
| [**extract\_schema\_from\_file\_name()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-extract-schema-from-file-name) | Extract schema name from file path name |
| [**extract\_table\_from\_file\_name()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-extract-table-from-file-name) | Extract table name from file path name |
| [**format\_bytes()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-bytes) | Convert byte count to value with units |
| [**format\_path()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-path) | Replace data and temp-file directories in path name with symbolic values |
| [**format\_statement()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-statement) | Truncate long statement to fixed length |
| [**format\_time()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-time) | Convert picoseconds value to value with units |
| [**list\_add()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-list-add) | Add item to list |
| [**list\_drop()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-list-drop) | Remove item from list |
| [**ps\_is\_account\_enabled()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-account-enabled) | Check whether account instrumentation is enabled |
| [**ps\_is\_consumer\_enabled()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-consumer-enabled) | Check whether consumer is enabled |
| [**ps\_is\_instrument\_default\_enabled()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-instrument-default-enabled) | Check whether instrument is enabled |
| [**ps\_is\_instrument\_default\_timed()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-instrument-default-timed) | Check whether instrument is timed |
| [**ps\_is\_thread\_instrumented()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-thread-instrumented) | Check whether thread is instrumented |
| [**ps\_thread\_account()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-account) | Return account for thread ID |
| [**ps\_thread\_id()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-id) | Return thread ID for connection ID |
| [**ps\_thread\_stack()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-stack) | Return event information for thread ID |
| [**ps\_thread\_trx\_info()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-trx-info) | Return transaction information for thread ID |
| [**quote\_identifier()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-quote-identifier) | Return string as quoted identifier |
| [**sys\_get\_config()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-get-config) | Return [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema configuration option |
| [**version\_major()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version-major) | MySQL server major version number |
| [**version\_minor()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version-minor) | MySQL server minor version number |
| [**version\_patch()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version-patch) | MySQL server patch release version number |

### 28.4.2 sys Schema Tables and Triggers

[28.4.2.1 The sys\_config Table](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config)

[28.4.2.2 The sys\_config\_insert\_set\_user Trigger](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config-insert-set-user)

[28.4.2.3 The sys\_config\_update\_set\_user Trigger](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config-update-set-user)

The following sections describe [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema tables and triggers.

#### 28.4.2.1 The sys\_config Table

This table contains [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema configuration options, one row per option. Configuration changes made by updating this table persist across client sessions and server restarts.

The **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table has these columns:

* **variable**

The configuration option name.

* **value**

The configuration option value.

* **set\_time**

The timestamp of the most recent modification to the row.

* **set\_by**

The account that made the most recent modification to the row. The value is **NULL** if the row has not been changed since the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema was installed.

As an efficiency measure to minimize the number of direct reads from the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table, [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema functions that use a value from this table check for a user-defined variable with a corresponding name, which is the user-defined variable having the same name plus a **@sys.** prefix. (For example, the variable corresponding to the **diagnostics.include\_raw** option is **@sys.diagnostics.include\_raw**.) If the user-defined variable exists in the current session and is non-**NULL**, the function uses its value in preference to the value in the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table. Otherwise, the function reads and uses the value from the table. In the latter case, the calling function conventionally also sets the corresponding user-defined variable to the table value so that further references to the configuration option within the same session use the variable and need not read the table again.

For example, the **statement\_truncate\_len** option controls the maximum length of statements returned by the **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)** function. The default is 64. To temporarily change the value to 32 for your current session, set the corresponding **@sys.statement\_truncate\_len** user-defined variable:

mysql> **SET @stmt = 'SELECT variable, value, set\_time, set\_by FROM sys\_config';**

mysql> **SELECT sys.format\_statement(@stmt);**

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

| sys.format\_statement(@stmt) |

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

| SELECT variable, value, set\_time, set\_by FROM sys\_config |

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

mysql> **SET @sys.statement\_truncate\_len = 32;**

mysql> **SELECT sys.format\_statement(@stmt);**

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

| sys.format\_statement(@stmt) |

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

| SELECT variabl ... ROM sys\_config |

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

Subsequent invocations of **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)** within the session continue to use the user-defined variable value (32), rather than the value stored in the table (64).

To stop using the user-defined variable and revert to using the value in the table, set the variable to **NULL** within your session:

mysql> **SET @sys.statement\_truncate\_len = NULL;**

mysql> **SELECT sys.format\_statement(@stmt);**

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

| sys.format\_statement(@stmt) |

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

| SELECT variable, value, set\_time, set\_by FROM sys\_config |

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

Alternatively, end your current session (causing the user-defined variable to no longer exist) and begin a new session.

The conventional relationship just described between options in the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table and user-defined variables can be exploited to make temporary configuration changes that end when your session ends. However, if you set a user-defined variable and then subsequently change the corresponding table value within the same session, the changed table value is not used in that session as long as the user-defined variable exists with a non-**NULL** value. (The changed table value is used in other sessions in which the user-defined variable is not assigned.)

The following list describes the options in the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table and the corresponding user-defined variables:

* **diagnostics.allow\_i\_s\_tables**, **@sys.diagnostics.allow\_i\_s\_tables**

If this option is **ON**, the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure is permitted to perform table scans on the [**INFORMATION\_SCHEMA.TABLES**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-tables-table) table. This can be expensive if there are many tables. The default is **OFF**.

* **diagnostics.include\_raw**, **@sys.diagnostics.include\_raw**

If this option is **ON**, the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure includes the raw output from querying the [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view. The default is **OFF**.

* **ps\_thread\_trx\_info.max\_length**, **@sys.ps\_thread\_trx\_info.max\_length**

The maximum length for JSON output produced by the **[ps\_thread\_trx\_info()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-thread-trx-info" \o "28.4.5.17 The ps_thread_trx_info() Function)** function. The default is 65535.

* **statement\_performance\_analyzer.limit**, **@sys.statement\_performance\_analyzer.limit**

The maximum number of rows to return for views that have no built-in limit. (For example, the [**statements\_with\_runtimes\_in\_95th\_percentile**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) view has a built-in limit in the sense that it returns only statements with average execution time in the 95th percentile.) The default is 100.

* **statement\_performance\_analyzer.view**, **@sys.statement\_performance\_analyzer.view**

The custom query or view to be used by the **[statement\_performance\_analyzer()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statement-performance-analyzer" \o "28.4.4.25 The statement_performance_analyzer() Procedure)** procedure (which is itself invoked by the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure). If the option value contains a space, it is interpreted as a query. Otherwise, it must be the name of an existing view that queries the Performance Schema **[events\_statements\_summary\_by\_digest](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-statement-summary-tables" \o "27.12.20.3 Statement Summary Tables)** table. There cannot be any **LIMIT** clause in the query or view definition if the **statement\_performance\_analyzer.limit** configuration option is greater than 0. The default is **NULL** (no custom view defined).

* **statement\_truncate\_len**, **@sys.statement\_truncate\_len**

The maximum length of statements returned by the **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)** function. Longer statements are truncated to this length. The default is 64.

Other options can be added to the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table. For example, the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) and **[execute\_prepared\_stmt()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-execute-prepared-stmt" \o "28.4.4.3 The execute_prepared_stmt() Procedure)** procedures use the **debug** option if it exists, but this option is not part of the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table by default because debug output normally is enabled only temporarily, by setting the corresponding **@sys.debug** user-defined variable. To enable debug output without having to set that variable in individual sessions, add the option to the table:

mysql> **INSERT INTO sys.sys\_config (variable, value) VALUES('debug', 'ON');**

To change the debug setting in the table, do two things. First, modify the value in the table itself:

mysql> **UPDATE sys.sys\_config**

**SET value = 'OFF'**

**WHERE variable = 'debug';**

Second, to also ensure that procedure invocations within the current session use the changed value from the table, set the corresponding user-defined variable to **NULL**:

mysql> **SET @sys.debug = NULL;**

#### 28.4.2.2 The sys\_config\_insert\_set\_user Trigger

For rows added to the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table by **INSERT** statements, the **[sys\_config\_insert\_set\_user](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config-insert-set-user" \o "28.4.2.2 The sys_config_insert_set_user Trigger)** trigger sets the **set\_by** column to the current user.

#### 28.4.2.3 The sys\_config\_update\_set\_user Trigger

The **[sys\_config\_update\_set\_user](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config-update-set-user" \o "28.4.2.3 The sys_config_update_set_user Trigger)** trigger for the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table is similar to the **[sys\_config\_insert\_set\_user](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config-insert-set-user" \o "28.4.2.2 The sys_config_insert_set_user Trigger)** trigger, but for [**UPDATE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#update) statements.

### 28.4.3 sys Schema Views

[28.4.3.1 The host\_summary and x$host\_summary Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary)

[28.4.3.2 The host\_summary\_by\_file\_io and x$host\_summary\_by\_file\_io Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io)

[28.4.3.3 The host\_summary\_by\_file\_io\_type and x$host\_summary\_by\_file\_io\_type Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io-type)

[28.4.3.4 The host\_summary\_by\_stages and x$host\_summary\_by\_stages Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-stages)

[28.4.3.5 The host\_summary\_by\_statement\_latency and x$host\_summary\_by\_statement\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-latency)

[28.4.3.6 The host\_summary\_by\_statement\_type and x$host\_summary\_by\_statement\_type Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-type)

[28.4.3.7 The innodb\_buffer\_stats\_by\_schema and x$innodb\_buffer\_stats\_by\_schema Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-schema)

[28.4.3.8 The innodb\_buffer\_stats\_by\_table and x$innodb\_buffer\_stats\_by\_table Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-table)

[28.4.3.9 The innodb\_lock\_waits and x$innodb\_lock\_waits Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-lock-waits)

[28.4.3.10 The io\_by\_thread\_by\_latency and x$io\_by\_thread\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-by-thread-by-latency)

[28.4.3.11 The io\_global\_by\_file\_by\_bytes and x$io\_global\_by\_file\_by\_bytes Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-bytes)

[28.4.3.12 The io\_global\_by\_file\_by\_latency and x$io\_global\_by\_file\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-latency)

[28.4.3.13 The io\_global\_by\_wait\_by\_bytes and x$io\_global\_by\_wait\_by\_bytes Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-bytes)

[28.4.3.14 The io\_global\_by\_wait\_by\_latency and x$io\_global\_by\_wait\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-latency)

[28.4.3.15 The latest\_file\_io and x$latest\_file\_io Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-latest-file-io)

[28.4.3.16 The memory\_by\_host\_by\_current\_bytes and x$memory\_by\_host\_by\_current\_bytes Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-host-by-current-bytes)

[28.4.3.17 The memory\_by\_thread\_by\_current\_bytes and x$memory\_by\_thread\_by\_current\_bytes Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-thread-by-current-bytes)

[28.4.3.18 The memory\_by\_user\_by\_current\_bytes and x$memory\_by\_user\_by\_current\_bytes Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-user-by-current-bytes)

[28.4.3.19 The memory\_global\_by\_current\_bytes and x$memory\_global\_by\_current\_bytes Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-by-current-bytes)

[28.4.3.20 The memory\_global\_total and x$memory\_global\_total Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-total)

[28.4.3.21 The metrics View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics)

[28.4.3.22 The processlist and x$processlist Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-processlist)

[28.4.3.23 The ps\_check\_lost\_instrumentation View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-check-lost-instrumentation)

[28.4.3.24 The schema\_auto\_increment\_columns View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-auto-increment-columns)

[28.4.3.25 The schema\_index\_statistics and x$schema\_index\_statistics Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-index-statistics)

[28.4.3.26 The schema\_object\_overview View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-object-overview)

[28.4.3.27 The schema\_redundant\_indexes and x$schema\_flattened\_keys Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-redundant-indexes)

[28.4.3.28 The schema\_table\_lock\_waits and x$schema\_table\_lock\_waits Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-lock-waits)

[28.4.3.29 The schema\_table\_statistics and x$schema\_table\_statistics Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics)

[28.4.3.30 The schema\_table\_statistics\_with\_buffer and x$schema\_table\_statistics\_with\_buffer Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics-with-buffer)

[28.4.3.31 The schema\_tables\_with\_full\_table\_scans and x$schema\_tables\_with\_full\_table\_scans Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-tables-with-full-table-scans)

[28.4.3.32 The schema\_unused\_indexes View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-unused-indexes)

[28.4.3.33 The session and x$session Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-session)

[28.4.3.34 The session\_ssl\_status View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-session-ssl-status)

[28.4.3.35 The statement\_analysis and x$statement\_analysis Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statement-analysis)

[28.4.3.36 The statements\_with\_errors\_or\_warnings and x$statements\_with\_errors\_or\_warnings Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-errors-or-warnings)

[28.4.3.37 The statements\_with\_full\_table\_scans and x$statements\_with\_full\_table\_scans Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-full-table-scans)

[28.4.3.38 The statements\_with\_runtimes\_in\_95th\_percentile and x$statements\_with\_runtimes\_in\_95th\_percentile Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile)

[28.4.3.39 The statements\_with\_sorting and x$statements\_with\_sorting Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-sorting)

[28.4.3.40 The statements\_with\_temp\_tables and x$statements\_with\_temp\_tables Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-temp-tables)

[28.4.3.41 The user\_summary and x$user\_summary Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary)

[28.4.3.42 The user\_summary\_by\_file\_io and x$user\_summary\_by\_file\_io Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io)

[28.4.3.43 The user\_summary\_by\_file\_io\_type and x$user\_summary\_by\_file\_io\_type Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io-type)

[28.4.3.44 The user\_summary\_by\_stages and x$user\_summary\_by\_stages Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-stages)

[28.4.3.45 The user\_summary\_by\_statement\_latency and x$user\_summary\_by\_statement\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-latency)

[28.4.3.46 The user\_summary\_by\_statement\_type and x$user\_summary\_by\_statement\_type Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-type)

[28.4.3.47 The version View](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version)

[28.4.3.48 The wait\_classes\_global\_by\_avg\_latency and x$wait\_classes\_global\_by\_avg\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-avg-latency)

[28.4.3.49 The wait\_classes\_global\_by\_latency and x$wait\_classes\_global\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-latency)

[28.4.3.50 The waits\_by\_host\_by\_latency and x$waits\_by\_host\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-host-by-latency)

[28.4.3.51 The waits\_by\_user\_by\_latency and x$waits\_by\_user\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-user-by-latency)

[28.4.3.52 The waits\_global\_by\_latency and x$waits\_global\_by\_latency Views](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-global-by-latency)

The following sections describe [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema views.

The **sys** schema contains many views that summarize Performance Schema tables in various ways. Most of these views come in pairs, such that one member of the pair has the same name as the other member, plus a **x$** prefix. For example, the **[host\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-file-io" \o "28.4.3.2 The host_summary_by_file_io and x$host_summary_by_file_io Views)** view summarizes file I/O grouped by host and displays latencies converted from picoseconds to more readable values (with units);

mysql> **SELECT \* FROM sys.host\_summary\_by\_file\_io;**

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

| host | ios | io\_latency |

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

| localhost | 67570 | 5.38 s |

| background | 3468 | 4.18 s |

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

The **[x$host\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-file-io" \o "28.4.3.2 The host_summary_by_file_io and x$host_summary_by_file_io Views)** view summarizes the same data but displays unformatted picosecond latencies:

mysql> **SELECT \* FROM sys.x$host\_summary\_by\_file\_io;**

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

| host | ios | io\_latency |

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

| localhost | 67574 | 5380678125144 |

| background | 3474 | 4758696829416 |

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

The view without the **x$** prefix is intended to provide output that is more user friendly and easier to read. The view with the **x$** prefix that displays the same values in raw form is intended more for use with other tools that perform their own processing on the data.

Views without the **x$** prefix differ from the corresponding **x$** views in these ways:

* Byte counts are formatted with size units using **[format\_bytes()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-bytes" \o "28.4.5.3 The format_bytes() Function)**.
* Time values are formatted with temporal units using **[format\_time()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-time" \o "28.4.5.6 The format_time() Function)**.
* SQL statements are truncated to a maximum display width using **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)**.
* Path name are shortened using **[format\_path()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-path" \o "28.4.5.4 The format_path() Function)**.

#### 28.4.3.1 The host\_summary and x$host\_summary Views

These views summarize statement activity, file I/O, and connections, grouped by host.

The **[host\_summary](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary" \o "28.4.3.1 The host_summary and x$host_summary Views)** and **[x$host\_summary](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary" \o "28.4.3.1 The host_summary and x$host_summary Views)** views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **statements**

The total number of statements for the host.

* **statement\_latency**

The total wait time of timed statements for the host.

* **statement\_avg\_latency**

The average wait time per timed statement for the host.

* **table\_scans**

The total number of table scans for the host.

* **file\_ios**

The total number of file I/O events for the host.

* **file\_io\_latency**

The total wait time of timed file I/O events for the host.

* **current\_connections**

The current number of connections for the host.

* **total\_connections**

The total number of connections for the host.

* **unique\_users**

The number of distinct users for the host.

* **current\_memory**

The current amount of allocated memory for the host.

* **total\_memory\_allocated**

The total amount of allocated memory for the host.

#### 28.4.3.2 The host\_summary\_by\_file\_io and x$host\_summary\_by\_file\_io Views

These views summarize file I/O, grouped by host. By default, rows are sorted by descending total file I/O latency.

The **[host\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-file-io" \o "28.4.3.2 The host_summary_by_file_io and x$host_summary_by_file_io Views)** and **[x$host\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-file-io" \o "28.4.3.2 The host_summary_by_file_io and x$host_summary_by_file_io Views)** views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **ios**

The total number of file I/O events for the host.

* **io\_latency**

The total wait time of timed file I/O events for the host.

#### 28.4.3.3 The host\_summary\_by\_file\_io\_type and x$host\_summary\_by\_file\_io\_type Views

These views summarize file I/O, grouped by host and event type. By default, rows are sorted by host and descending total I/O latency.

The [**host\_summary\_by\_file\_io\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io-type) and [**x$host\_summary\_by\_file\_io\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-file-io-type) views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **event\_name**

The file I/O event name.

* **total**

The total number of occurrences of the file I/O event for the host.

* **total\_latency**

The total wait time of timed occurrences of the file I/O event for the host.

* **max\_latency**

The maximum single wait time of timed occurrences of the file I/O event for the host.

#### 28.4.3.4 The host\_summary\_by\_stages and x$host\_summary\_by\_stages Views

These views summarize statement stages, grouped by host. By default, rows are sorted by host and descending total latency.

The **[host\_summary\_by\_stages](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-stages" \o "28.4.3.4 The host_summary_by_stages and x$host_summary_by_stages Views)** and **[x$host\_summary\_by\_stages](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-host-summary-by-stages" \o "28.4.3.4 The host_summary_by_stages and x$host_summary_by_stages Views)** views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **event\_name**

The stage event name.

* **total**

The total number of occurrences of the stage event for the host.

* **total\_latency**

The total wait time of timed occurrences of the stage event for the host.

* **avg\_latency**

The average wait time per timed occurrence of the stage event for the host.

#### 28.4.3.5 The host\_summary\_by\_statement\_latency and x$host\_summary\_by\_statement\_latency Views

These views summarize overall statement statistics, grouped by host. By default, rows are sorted by descending total latency.

The [**host\_summary\_by\_statement\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-latency) and [**x$host\_summary\_by\_statement\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-latency) views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **total**

The total number of statements for the host.

* **total\_latency**

The total wait time of timed statements for the host.

* **max\_latency**

The maximum single wait time of timed statements for the host.

* **lock\_latency**

The total time waiting for locks by timed statements for the host.

* **rows\_sent**

The total number of rows returned by statements for the host.

* **rows\_examined**

The total number of rows read from storage engines by statements for the host.

* **rows\_affected**

The total number of rows affected by statements for the host.

* **full\_scans**

The total number of full table scans by statements for the host.

#### 28.4.3.6 The host\_summary\_by\_statement\_type and x$host\_summary\_by\_statement\_type Views

These views summarize informaion about statements executed, grouped by host and statement type. By default, rows are sorted by host and descending total latency.

The [**host\_summary\_by\_statement\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-type) and [**x$host\_summary\_by\_statement\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-host-summary-by-statement-type) views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **statement**

The final component of the statement event name.

* **total**

The total number of occurrences of the statement event for the host.

* **total\_latency**

The total wait time of timed occurrences of the statement event for the host.

* **max\_latency**

The maximum single wait time of timed occurrences of the statement event for the host.

* **lock\_latency**

The total time waiting for locks by timed occurrences of the statement event for the host.

* **rows\_sent**

The total number of rows returned by occurrences of the statement event for the host.

* **rows\_examined**

The total number of rows read from storage engines by occurrences of the statement event for the host.

* **rows\_affected**

The total number of rows affected by occurrences of the statement event for the host.

* **full\_scans**

The total number of full table scans by occurrences of the statement event for the host.

#### 28.4.3.7 The innodb\_buffer\_stats\_by\_schema and x$innodb\_buffer\_stats\_by\_schema Views

These views summarize the information in the **INFORMATION\_SCHEMA** [**INNODB\_BUFFER\_PAGE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-buffer-page-table) table, grouped by schema. By default, rows are sorted by descending buffer size.

**Warning**

Querying views that access the [**INNODB\_BUFFER\_PAGE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-buffer-page-table) table can affect performance. Do not query these views on a production system unless you are aware of the performance impact and have determined it to be acceptable. To avoid impacting performance on a production system, reproduce the issue you want to investigate and query buffer pool statistics on a test instance.

The [**innodb\_buffer\_stats\_by\_schema**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-schema) and [**x$innodb\_buffer\_stats\_by\_schema**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-schema) views have these columns:

* **object\_schema**

The schema name for the object, or **InnoDB System** if the table belongs to the **InnoDB** storage engine.

* **allocated**

The total number of bytes allocated for the schema.

* **data**

The total number of data bytes allocated for the schema.

* **pages**

The total number of pages allocated for the schema.

* **pages\_hashed**

The total number of hashed pages allocated for the schema.

* **pages\_old**

The total number of old pages allocated for the schema.

* **rows\_cached**

The total number of cached rows for the schema.

#### 28.4.3.8 The innodb\_buffer\_stats\_by\_table and x$innodb\_buffer\_stats\_by\_table Views

These views summarize the information in the **INFORMATION\_SCHEMA** [**INNODB\_BUFFER\_PAGE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-buffer-page-table) table, grouped by schema and table. By default, rows are sorted by descending buffer size.

**Warning**

Querying views that access the [**INNODB\_BUFFER\_PAGE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-buffer-page-table) table can affect performance. Do not query these views on a production system unless you are aware of the performance impact and have determined it to be acceptable. To avoid impacting performance on a production system, reproduce the issue you want to investigate and query buffer pool statistics on a test instance.

The [**innodb\_buffer\_stats\_by\_table**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-table) and [**x$innodb\_buffer\_stats\_by\_table**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-innodb-buffer-stats-by-table) views have these columns:

* **object\_schema**

The schema name for the object, or **InnoDB System** if the table belongs to the **InnoDB** storage engine.

* **object\_name**

The table name.

* **allocated**

The total number of bytes allocated for the table.

* **data**

The number of data bytes allocated for the table.

* **pages**

The total number of pages allocated for the table.

* **pages\_hashed**

The number of hashed pages allocated for the table.

* **pages\_old**

The number of old pages allocated for the table.

* **rows\_cached**

The number of cached rows for the table.

#### 28.4.3.9 The innodb\_lock\_waits and x$innodb\_lock\_waits Views

These views summarize the **InnoDB** locks that transactions are waiting for. By default, rows are sorted by descending lock age.

The **[innodb\_lock\_waits](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-innodb-lock-waits" \o "28.4.3.9 The innodb_lock_waits and x$innodb_lock_waits Views)** and **[x$innodb\_lock\_waits](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-innodb-lock-waits" \o "28.4.3.9 The innodb_lock_waits and x$innodb_lock_waits Views)** views have these columns:

* **wait\_started**

The time at which the lock wait started.

* **wait\_age**

How long the lock has been waited for, as a [**TIME**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\data-types.html#time) value.

* **wait\_age\_secs**

How long the lock has been waited for, in seconds.

* **locked\_table\_schema**

The schema that contains the locked table.

* **locked\_table\_name**

The name of the locked table.

* **locked\_table\_partition**

The name of the locked partition, if any; **NULL** otherwise.

* **locked\_table\_subpartition**

The name of the locked subpartition, if any; **NULL** otherwise.

* **locked\_index**

The name of the locked index.

* **locked\_type**

The type of the waiting lock.

* **waiting\_trx\_id**

The ID of the waiting transaction.

* **waiting\_trx\_started**

The time at which the waiting transaction started.

* **waiting\_trx\_age**

How long the waiting transaction has been waiting, as a [**TIME**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\data-types.html#time) value.

* **waiting\_trx\_rows\_locked**

The number of rows locked by the waiting transaction.

* **waiting\_trx\_rows\_modified**

The number of rows modified by the waiting transaction.

* **waiting\_pid**

The processlist ID of the waiting transaction.

* **waiting\_query**

The statement that is waiting for the lock.

* **waiting\_lock\_id**

The ID of the waiting lock.

* **waiting\_lock\_mode**

The mode of the waiting lock.

* **blocking\_trx\_id**

The ID of the transaction that is blocking the waiting lock.

* **blocking\_pid**

The processlist ID of the blocking transaction.

* **blocking\_query**

The statement the blocking transaction is executing. This field reports NULL if the session that issued the blocking query becomes idle. For more information, see [Identifying a Blocking Query After the Issuing Session Becomes Idle](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\innodb-storage-engine.html#innodb-information-schema-examples-null-blocking-query).

* **blocking\_lock\_id**

The ID of the lock that is blocking the waiting lock.

* **blocking\_lock\_mode**

The mode of the lock that is blocking the waiting lock.

* **blocking\_trx\_started**

The time at which the blocking transaction started.

* **blocking\_trx\_age**

How long the blocking transaction has been executing, as a [**TIME**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\data-types.html#time) value.

* **blocking\_trx\_rows\_locked**

The number of rows locked by the blocking transaction.

* **blocking\_trx\_rows\_modified**

The number of rows modified by the blocking transaction.

* **sql\_kill\_blocking\_query**

The [**KILL**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#kill) statement to execute to kill the blocking statement.

* **sql\_kill\_blocking\_connection**

The [**KILL**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#kill) statement to execute to kill the session running the blocking statement.

#### 28.4.3.10 The io\_by\_thread\_by\_latency and x$io\_by\_thread\_by\_latency Views

These views summarize I/O consumers to display time waiting for I/O, grouped by thread. By default, rows are sorted by descending total I/O latency.

The **[io\_by\_thread\_by\_latency](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-io-by-thread-by-latency" \o "28.4.3.10 The io_by_thread_by_latency and x$io_by_thread_by_latency Views)** and **[x$io\_by\_thread\_by\_latency](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-io-by-thread-by-latency" \o "28.4.3.10 The io_by_thread_by_latency and x$io_by_thread_by_latency Views)** views have these columns:

* **user**

For foreground threads, the account associated with the thread. For background threads, the thread name.

* **total**

The total number of I/O events for the thread.

* **total\_latency**

The total wait time of timed I/O events for the thread.

* **min\_latency**

The minimum single wait time of timed I/O events for the thread.

* **avg\_latency**

The average wait time per timed I/O event for the thread.

* **max\_latency**

The maximum single wait time of timed I/O events for the thread.

* **thread\_id**

The thread ID.

* **processlist\_id**

For foreground threads, the processlist ID of the thread. For background threads, **NULL**.

#### 28.4.3.11 The io\_global\_by\_file\_by\_bytes and x$io\_global\_by\_file\_by\_bytes Views

These views summarize global I/O consumers to display amount of I/O, grouped by file. By default, rows are sorted by descending total I/O (bytes read and written).

The [**io\_global\_by\_file\_by\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-bytes) and [**x$io\_global\_by\_file\_by\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-bytes) views have these columns:

* **file**

The file path name.

* **count\_read**

The total number of read events for the file.

* **total\_read**

The total number of bytes read from the file.

* **avg\_read**

The average number of bytes per read from the file.

* **count\_write**

The total number of write events for the file.

* **total\_written**

The total number of bytes written to the file.

* **avg\_write**

The average number of bytes per write to the file.

* **total**

The total number of bytes read and written for the file.

* **write\_pct**

The percentage of total bytes of I/O that were writes.

#### 28.4.3.12 The io\_global\_by\_file\_by\_latency and x$io\_global\_by\_file\_by\_latency Views

These views summarize global I/O consumers to display time waiting for I/O, grouped by file. By default, rows are sorted by descending total latency.

The [**io\_global\_by\_file\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-latency) and [**x$io\_global\_by\_file\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-file-by-latency) views have these columns:

* **file**

The file path name.

* **total**

The total number of I/O events for the file.

* **total\_latency**

The total wait time of timed I/O events for the file.

* **count\_read**

The total number of read I/O events for the file.

* **read\_latency**

The total wait time of timed read I/O events for the file.

* **count\_write**

The total number of write I/O events for the file.

* **write\_latency**

The total wait time of timed write I/O events for the file.

* **count\_misc**

The total number of other I/O events for the file.

* **misc\_latency**

The total wait time of timed other I/O events for the file.

#### 28.4.3.13 The io\_global\_by\_wait\_by\_bytes and x$io\_global\_by\_wait\_by\_bytes Views

These views summarize global I/O consumers to display amount of I/O and time waiting for I/O, grouped by event. By default, rows are sorted by descending total I/O (bytes read and written).

The [**io\_global\_by\_wait\_by\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-bytes) and [**x$io\_global\_by\_wait\_by\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-bytes) views have these columns:

* **event\_name**

The I/O event name, with the **wait/io/file/** prefix stripped.

* **total**

The total number of occurrences of the I/O event.

* **total\_latency**

The total wait time of timed occurrences of the I/O event.

* **min\_latency**

The minimum single wait time of timed occurrences of the I/O event.

* **avg\_latency**

The average wait time per timed occurrence of the I/O event.

* **max\_latency**

The maximum single wait time of timed occurrences of the I/O event.

* **count\_read**

The number of read requests for the I/O event.

* **total\_read**

The number of bytes read for the I/O event.

* **avg\_read**

The average number of bytes per read for the I/O event.

* **count\_write**

The number of write requests for the I/O event.

* **total\_written**

The number of bytes written for the I/O event.

* **avg\_written**

The average number of bytes per write for the I/O event.

* **total\_requested**

The total number of bytes read and written for the I/O event.

#### 28.4.3.14 The io\_global\_by\_wait\_by\_latency and x$io\_global\_by\_wait\_by\_latency Views

These views summarize global I/O consumers to display amount of I/O and time waiting for I/O, grouped by event. By default, rows are sorted by descending total latency.

The [**io\_global\_by\_wait\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-latency) and [**x$io\_global\_by\_wait\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-io-global-by-wait-by-latency) views have these columns:

* **event\_name**

The I/O event name, with the **wait/io/file/** prefix stripped.

* **total**

The total number of occurrences of the I/O event.

* **total\_latency**

The total wait time of timed occurrences of the I/O event.

* **avg\_latency**

The average wait time per timed occurrence of the I/O event.

* **max\_latency**

The maximum single wait time of timed occurrences of the I/O event.

* **read\_latency**

The total wait time of timed read occurrences of the I/O event.

* **write\_latency**

The total wait time of timed write occurrences of the I/O event.

* **misc\_latency**

The total wait time of timed other occurrences of the I/O event.

* **count\_read**

The number of read requests for the I/O event.

* **total\_read**

The number of bytes read for the I/O event.

* **avg\_read**

The average number of bytes per read for the I/O event.

* **count\_write**

The number of write requests for the I/O event.

* **total\_written**

The number of bytes written for the I/O event.

* **avg\_written**

The average number of bytes per write for the I/O event.

#### 28.4.3.15 The latest\_file\_io and x$latest\_file\_io Views

These views summarize file I/O activity, grouped by file and thread. By default, rows are sorted with most recent I/O first.

The **[latest\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-latest-file-io" \o "28.4.3.15 The latest_file_io and x$latest_file_io Views)** and **[x$latest\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-latest-file-io" \o "28.4.3.15 The latest_file_io and x$latest_file_io Views)** views have these columns:

* **thread**

For foreground threads, the account associated with the thread (and port number for TCP/IP connections). For background threads, the thread name and thread ID

* **file**

The file path name.

* **latency**

The wait time of the file I/O event.

* **operation**

The type of operation.

* **requested**

The number of data bytes requested for the file I/O event.

#### 28.4.3.16 The memory\_by\_host\_by\_current\_bytes and x$memory\_by\_host\_by\_current\_bytes Views

These views summarize memory use, grouped by host. By default, rows are sorted by descending amount of memory used.

The [**memory\_by\_host\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-host-by-current-bytes) and [**x$memory\_by\_host\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-host-by-current-bytes) views have these columns:

* **host**

The host from which the client connected. Rows for which the **HOST** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **current\_count\_used**

The current number of allocated memory blocks that have not been freed yet for the host.

* **current\_allocated**

The current number of allocated bytes that have not been freed yet for the host.

* **current\_avg\_alloc**

The current number of allocated bytes per memory block for the host.

* **current\_max\_alloc**

The largest single current memory allocation in bytes for the host.

* **total\_allocated**

The total memory allocation in bytes for the host.

#### 28.4.3.17 The memory\_by\_thread\_by\_current\_bytes and x$memory\_by\_thread\_by\_current\_bytes Views

These views summarize memory use, grouped by thread. By default, rows are sorted by descending amount of memory used.

The [**memory\_by\_thread\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-thread-by-current-bytes) and [**x$memory\_by\_thread\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-thread-by-current-bytes) views have these columns:

* **thread\_id**

The thread ID.

* **user**

The thread user or thread name.

* **current\_count\_used**

The current number of allocated memory blocks that have not been freed yet for the thread.

* **current\_allocated**

The current number of allocated bytes that have not been freed yet for the thread.

* **current\_avg\_alloc**

The current number of allocated bytes per memory block for the thread.

* **current\_max\_alloc**

The largest single current memory allocation in bytes for the thread.

* **total\_allocated**

The total memory allocation in bytes for the thread.

#### 28.4.3.18 The memory\_by\_user\_by\_current\_bytes and x$memory\_by\_user\_by\_current\_bytes Views

These views summarize memory use, grouped by user. By default, rows are sorted by descending amount of memory used.

The [**memory\_by\_user\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-user-by-current-bytes) and [**x$memory\_by\_user\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-by-user-by-current-bytes) views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **current\_count\_used**

The current number of allocated memory blocks that have not been freed yet for the user.

* **current\_allocated**

The current number of allocated bytes that have not been freed yet for the user.

* **current\_avg\_alloc**

The current number of allocated bytes per memory block for the user.

* **current\_max\_alloc**

The largest single current memory allocation in bytes for the user.

* **total\_allocated**

The total memory allocation in bytes for the user.

#### 28.4.3.19 The memory\_global\_by\_current\_bytes and x$memory\_global\_by\_current\_bytes Views

These views summarize memory use, grouped by allocation type (that is, by event). By default, rows are sorted by descending amount of memory used.

The [**memory\_global\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-by-current-bytes) and [**x$memory\_global\_by\_current\_bytes**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-memory-global-by-current-bytes) views have these columns:

* **event\_name**

The memory event name.

* **current\_count**

The total number of occurrences of the event.

* **current\_alloc**

The current number of allocated bytes that have not been freed yet for the event.

* **current\_avg\_alloc**

The current number of allocated bytes per memory block for the event.

* **high\_count**

The high-water mark for number of memory blocks allocated for the event.

* **high\_alloc**

The high-water mark for number of bytes allocated for the event.

* **high\_avg\_alloc**

The high-water mark for average number of bytes per memory block allocated for the event.

#### 28.4.3.20 The memory\_global\_total and x$memory\_global\_total Views

These views summarize total memory use within the server.

The **[memory\_global\_total](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-memory-global-total" \o "28.4.3.20 The memory_global_total and x$memory_global_total Views)** and **[x$memory\_global\_total](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-memory-global-total" \o "28.4.3.20 The memory_global_total and x$memory_global_total Views)** views have these columns:

* **total\_allocated**

The total bytes of memory allocated within the server.

#### 28.4.3.21 The metrics View

This view summarizes MySQL server metrics to show variable names, values, types, and whether they are enabled. By default, rows are sorted by variable type and name.

The [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view includes this information:

* Global status variables from the Performance Schema **[global\_status](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-status-variable-tables" \o "27.12.15 Performance Schema Status Variable Tables)** table
* **InnoDB** metrics from the **INFORMATION\_SCHEMA** [**INNODB\_METRICS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-metrics-table) table
* Current and total memory allocation, based on the Performance Schema memory instrumentation
* The current time (human readable and Unix timestamp formats)

There is some duplication of information between the **[global\_status](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-status-variable-tables" \o "27.12.15 Performance Schema Status Variable Tables)** and [**INNODB\_METRICS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-metrics-table) tables, which the [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view eliminates.

The [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view has these columns:

* **Variable\_name**

The metric name. The metric type determines the source from which the name is taken:

* + For global status variables: The **VARIABLE\_NAME** column of the **[global\_status](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-status-variable-tables" \o "27.12.15 Performance Schema Status Variable Tables)** table
  + For **InnoDB** metrics: The **NAME** column of the [**INNODB\_METRICS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-metrics-table) table
  + For other metrics: A view-provided descriptive string
* **Variable\_value**

The metric value. The metric type determines the source from which the value is taken:

* + For global status variables: The **VARIABLE\_VALUE** column of the **[global\_status](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-status-variable-tables" \o "27.12.15 Performance Schema Status Variable Tables)** table
  + For **InnoDB** metrics: The **COUNT** column of the [**INNODB\_METRICS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-metrics-table) table
  + For memory metrics: The relevant column from the Performance Schema **[memory\_summary\_global\_by\_event\_name](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-memory-summary-tables" \o "27.12.20.10 Memory Summary Tables)** table
  + For the current time: The value of [**NOW(3)**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_now) or [**UNIX\_TIMESTAMP(NOW(3))**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_unix-timestamp)
* **Type**

The metric type:

* + For global status variables: **Global Status**
  + For **InnoDB** metrics: **InnoDB Metrics - %**, where **%** is replaced by the value of the **SUBSYSTEM** column of the [**INNODB\_METRICS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-metrics-table) table
  + For memory metrics: **Performance Schema**
  + For the current time: **System Time**
* **Enabled**

Whether the metric is enabled:

* + For global status variables: **YES**
  + For **InnoDB** metrics: **YES** if the **STATUS** column of the [**INNODB\_METRICS**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-innodb-metrics-table) table is **enabled**, **NO** otherwise
  + For memory metrics: **NO**, **YES**, or **PARTIAL** (currently, **PARTIAL** occurs only for memory metrics and indicates that not all **memory/%** instruments are enabled; Performance Schema memory instruments are always enabled)
  + For the current time: **YES**

#### 28.4.3.22 The processlist and x$processlist Views

The MySQL process list indicates the operations currently being performed by the set of threads executing within the server. The **[processlist](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-processlist" \o "28.4.3.22 The processlist and x$processlist Views)** and **[x$processlist](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-processlist" \o "28.4.3.22 The processlist and x$processlist Views)** views summarize process information. They provide more complete information than the [**SHOW PROCESSLIST**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#show-processlist) statement and the **INFORMATION\_SCHEMA** [**PROCESSLIST**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-processlist-table) table, and are also nonblocking. By default, rows are sorted by descending process time and descending wait time. For a comparison of process information sources, see [Sources of Process Information](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\optimization.html#processlist-sources).

The column descriptions here are brief. For additional information, see the description of the Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table at [Section 27.12.21.6, “The threads Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table).

The **[processlist](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-processlist" \o "28.4.3.22 The processlist and x$processlist Views)** and **[x$processlist](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-processlist" \o "28.4.3.22 The processlist and x$processlist Views)** views have these columns:

* **thd\_id**

The thread ID.

* **conn\_id**

The connection ID.

* **user**

The thread user or thread name.

* **db**

The default database for the thread, or **NULL** if there is none.

* **command**

For foreground threads, the type of command the thread is executing on behalf of the client, or **Sleep** if the session is idle.

* **state**

An action, event, or state that indicates what the thread is doing.

* **time**

The time in seconds that the thread has been in its current state.

* **current\_statement**

The statement the thread is executing, or **NULL** if it is not executing any statement.

* **statement\_latency**

How long the statement has been executing.

* **progress**

The percentage of work completed for stages that support progress reporting. See [Section 28.3, “sys Schema Progress Reporting”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-progress-reporting).

* **lock\_latency**

The time spent waiting for locks by the current statement.

* **rows\_examined**

The number of rows read from storage engines by the current statement.

* **rows\_sent**

The number of rows returned by the current statement.

* **rows\_affected**

The number of rows affected by the current statement.

* **tmp\_tables**

The number of internal in-memory temporary tables created by the current statement.

* **tmp\_disk\_tables**

The number of internal on-disk temporary tables created by the current statement.

* **full\_scan**

The number of full table scans performed by the current statement.

* **last\_statement**

The last statement executed by the thread, if there is no currently executing statement or wait.

* **last\_statement\_latency**

How long the last statement executed.

* **current\_memory**

The number of bytes allocated by the thread.

* **last\_wait**

The name of the most recent wait event for the thread.

* **last\_wait\_latency**

The wait time of the most recent wait event for the thread.

* **source**

The source file and line number containing the instrumented code that produced the event.

* **trx\_latency**

The wait time of the current transaction for the thread.

* **trx\_state**

The state for the current transaction for the thread.

* **trx\_autocommit**

Whether autocommit mode was enabled when the current transaction started.

* **pid**

The client process ID.

* **program\_name**

The client program name.

#### 28.4.3.23 The ps\_check\_lost\_instrumentation View

This view returns information about lost Performance Schema instruments, to indicate whether the Performance Schema is unable to monitor all runtime data.

The **[ps\_check\_lost\_instrumentation](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-check-lost-instrumentation" \o "28.4.3.23 The ps_check_lost_instrumentation View)** view has these columns:

* **variable\_name**

The Performance Schema status variable name indicating which type of instrument was lost.

* **variable\_value**

The number of instruments lost.

#### 28.4.3.24 The schema\_auto\_increment\_columns View

This view indicates which tables have **AUTO\_INCREMENT** columns and provides information about those columns, such as the current and maximum column values and the usage ratio (ratio of used to possible values). By default, rows are sorted by descending usage ratio and maximum column value.

Tables in these schemas are excluded from view output: **mysql**, **sys**, **INFORMATION\_SCHEMA**, **performance\_schema**.

The **[schema\_auto\_increment\_columns](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-auto-increment-columns" \o "28.4.3.24 The schema_auto_increment_columns View)** view has these columns:

* **table\_schema**

The schema that contains the table.

* **table\_name**

The table that contains the **AUTO\_INCREMENT** column.

* **column\_name**

The name of the **AUTO\_INCREMENT** column.

* **data\_type**

The data type of the column.

* **column\_type**

The column type of the column, which is the data type plus possibly other information. For example, for a column with a **bigint(20) unsigned** column type, the data type is just **bigint**.

* **is\_signed**

Whether the column type is signed.

* **is\_unsigned**

Whether the column type is unsigned.

* **max\_value**

The maximum permitted value for the column.

* **auto\_increment**

The current **AUTO\_INCREMENT** value for the column.

* **auto\_increment\_ratio**

The ratio of used to permitted values for the column. This indicates how much of the sequence of values is “used up.”

#### 28.4.3.25 The schema\_index\_statistics and x$schema\_index\_statistics Views

These views provide index statistics. By default, rows are sorted by descending total index latency.

The **[schema\_index\_statistics](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-index-statistics" \o "28.4.3.25 The schema_index_statistics and x$schema_index_statistics Views)** and **[x$schema\_index\_statistics](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-index-statistics" \o "28.4.3.25 The schema_index_statistics and x$schema_index_statistics Views)** views have these columns:

* **table\_schema**

The schema that contains the table.

* **table\_name**

The table that contains the index.

* **index\_name**

The name of the index.

* **rows\_selected**

The total number of rows read using the index.

* **select\_latency**

The total wait time of timed reads using the index.

* **rows\_inserted**

The total number of rows inserted into the index.

* **insert\_latency**

The total wait time of timed inserts into the index.

* **rows\_updated**

The total number of rows updated in the index.

* **update\_latency**

The total wait time of timed updates in the index.

* **rows\_deleted**

The total number of rows deleted from the index.

* **delete\_latency**

The total wait time of timed deletes from the index.

#### 28.4.3.26 The schema\_object\_overview View

This view summarizes the types of objects within each schema. By default, rows are sorted by schema and object type.

**Note**

For MySQL instances with a large number of objects, this view might take a long time to execute.

The **[schema\_object\_overview](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-object-overview" \o "28.4.3.26 The schema_object_overview View)** view has these columns:

* **db**

The schema name.

* **object\_type**

The object type: **BASE TABLE**, **INDEX (*index\_type*)**, **EVENT**, **FUNCTION**, **PROCEDURE**, **TRIGGER**, **VIEW**.

* **count**

The number of objects in the schema of the given type.

#### 28.4.3.27 The schema\_redundant\_indexes and x$schema\_flattened\_keys Views

The **[schema\_redundant\_indexes](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-redundant-indexes" \o "28.4.3.27 The schema_redundant_indexes and x$schema_flattened_keys Views)** view displays indexes that duplicate other indexes or are made redundant by them. The **[x$schema\_flattened\_keys](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-redundant-indexes" \o "28.4.3.27 The schema_redundant_indexes and x$schema_flattened_keys Views)** view is a helper view for **[schema\_redundant\_indexes](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-redundant-indexes" \o "28.4.3.27 The schema_redundant_indexes and x$schema_flattened_keys Views)**.

In the following column descriptions, the dominant index is the one that makes the redundant index redundant.

The **[schema\_redundant\_indexes](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-redundant-indexes" \o "28.4.3.27 The schema_redundant_indexes and x$schema_flattened_keys Views)** view has these columns:

* **table\_schema**

The schema that contains the table.

* **table\_name**

The table that contains the index.

* **redundant\_index\_name**

The name of the redundant index.

* **redundant\_index\_columns**

The names of the columns in the redundant index.

* **redundant\_index\_non\_unique**

The number of nonunique columns in the redundant index.

* **dominant\_index\_name**

The name of the dominant index.

* **dominant\_index\_columns**

The names of the columns in the dominant index.

* **dominant\_index\_non\_unique**

The number of nonunique columns in the dominant index.

* **subpart\_exists**

Whether the index indexes only part of a column.

* **sql\_drop\_index**

The statement to execute to drop the redundant index.

The **[x$schema\_flattened\_keys](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-redundant-indexes" \o "28.4.3.27 The schema_redundant_indexes and x$schema_flattened_keys Views)** view has these columns:

* **table\_schema**

The schema that contains the table.

* **table\_name**

The table that contains the index.

* **index\_name**

An index name.

* **non\_unique**

The number of nonunique columns in the index.

* **subpart\_exists**

Whether the index indexes only part of a column.

* **index\_columns**

The name of the columns in the index.

#### 28.4.3.28 The schema\_table\_lock\_waits and x$schema\_table\_lock\_waits Views

These views display which sessions are blocked waiting on metadata locks, and what is blocking them.

The column descriptions here are brief. For additional information, see the description of the Performance Schema **[metadata\_locks](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-metadata-locks-table" \o "27.12.13.3 The metadata_locks Table)** table at [Section 27.12.13.3, “The metadata\_locks Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-metadata-locks-table).

The **[schema\_table\_lock\_waits](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-table-lock-waits" \o "28.4.3.28 The schema_table_lock_waits and x$schema_table_lock_waits Views)** and **[x$schema\_table\_lock\_waits](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-table-lock-waits" \o "28.4.3.28 The schema_table_lock_waits and x$schema_table_lock_waits Views)** views have these columns:

* **object\_schema**

The schema containing the object to be locked.

* **object\_name**

The name of the instrumented object.

* **waiting\_thread\_id**

The thread ID of the thread that is waiting for the lock.

* **waiting\_pid**

The processlist ID of the thread that is waiting for the lock.

* **waiting\_account**

The account associated with the session that is waiting for the lock.

* **waiting\_lock\_type**

The type of the waiting lock.

* **waiting\_lock\_duration**

How long the waiting lock has been waiting.

* **waiting\_query**

The statement that is waiting for the lock.

* **waiting\_query\_secs**

How long the statement has been waiting, in seconds.

* **waiting\_query\_rows\_affected**

The number of rows affected by the statement.

* **waiting\_query\_rows\_examined**

The number of rows read from storage engines by the statement.

* **blocking\_thread\_id**

The thread ID of the thread that is blocking the waiting lock.

* **blocking\_pid**

The processlist ID of the thread that is blocking the waiting lock.

* **blocking\_account**

The account associated with the thread that is blocking the waiting lock.

* **blocking\_lock\_type**

The type of lock that is blocking the waiting lock.

* **blocking\_lock\_duration**

How long the blocking lock has been held.

* **sql\_kill\_blocking\_query**

The [**KILL**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#kill) statement to execute to kill the blocking statement.

* **sql\_kill\_blocking\_connection**

The [**KILL**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#kill) statement to execute to kill the session running the blocking statement.

#### 28.4.3.29 The schema\_table\_statistics and x$schema\_table\_statistics Views

These views summarize table statistics. By default, rows are sorted by descending total wait time (tables with most contention first).

These views user a helper view, **x$ps\_schema\_table\_statistics\_io**.

The **[schema\_table\_statistics](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-table-statistics" \o "28.4.3.29 The schema_table_statistics and x$schema_table_statistics Views)** and **[x$schema\_table\_statistics](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-table-statistics" \o "28.4.3.29 The schema_table_statistics and x$schema_table_statistics Views)** views have these columns:

* **table\_schema**

The schema that contains the table.

* **table\_name**

The table name.

* **total\_latency**

The total wait time of timed I/O events for the table.

* **rows\_fetched**

The total number of rows read from the table.

* **fetch\_latency**

The total wait time of timed read I/O events for the table.

* **rows\_inserted**

The total number of rows inserted into the table.

* **insert\_latency**

The total wait time of timed insert I/O events for the table.

* **rows\_updated**

The total number of rows updated in the table.

* **update\_latency**

The total wait time of timed update I/O events for the table.

* **rows\_deleted**

The total number of rows deleted from the table.

* **delete\_latency**

The total wait time of timed delete I/O events for the table.

* **io\_read\_requests**

The total number of read requests for the table.

* **io\_read**

The total number of bytes read from the table.

* **io\_read\_latency**

The total wait time of reads from the table.

* **io\_write\_requests**

The total number of write requests for the table.

* **io\_write**

The total number of bytes written to the table.

* **io\_write\_latency**

The total wait time of writes to the table.

* **io\_misc\_requests**

The total number of miscellaneous I/O requests for the table.

* **io\_misc\_latency**

The total wait time of miscellaneous I/O requests for the table.

#### 28.4.3.30 The schema\_table\_statistics\_with\_buffer and x$schema\_table\_statistics\_with\_buffer Views

These views summarize table statistics, including **InnoDB** buffer pool statistics. By default, rows are sorted by descending total wait time (tables with most contention first).

These views user a helper view, **x$ps\_schema\_table\_statistics\_io**.

The [**schema\_table\_statistics\_with\_buffer**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics-with-buffer) and [**x$schema\_table\_statistics\_with\_buffer**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-table-statistics-with-buffer) views have these columns:

* **table\_schema**

The schema that contains the table.

* **table\_name**

The table name.

* **rows\_fetched**

The total number of rows read from the table.

* **fetch\_latency**

The total wait time of timed read I/O events for the table.

* **rows\_inserted**

The total number of rows inserted into the table.

* **insert\_latency**

The total wait time of timed insert I/O events for the table.

* **rows\_updated**

The total number of rows updated in the table.

* **update\_latency**

The total wait time of timed update I/O events for the table.

* **rows\_deleted**

The total number of rows deleted from the table.

* **delete\_latency**

The total wait time of timed delete I/O events for the table.

* **io\_read\_requests**

The total number of read requests for the table.

* **io\_read**

The total number of bytes read from the table.

* **io\_read\_latency**

The total wait time of reads from the table.

* **io\_write\_requests**

The total number of write requests for the table.

* **io\_write**

The total number of bytes written to the table.

* **io\_write\_latency**

The total wait time of writes to the table.

* **io\_misc\_requests**

The total number of miscellaneous I/O requests for the table.

* **io\_misc\_latency**

The total wait time of miscellaneous I/O requests for the table.

* **innodb\_buffer\_allocated**

The total number of **InnoDB** buffer bytes allocated for the table.

* **innodb\_buffer\_data**

The total number of **InnoDB** data bytes allocated for the table.

* **innodb\_buffer\_free**

The total number of **InnoDB** nondata bytes allocated for the table (**innodb\_buffer\_allocated** − **innodb\_buffer\_data**).

* **innodb\_buffer\_pages**

The total number of **InnoDB** pages allocated for the table.

* **innodb\_buffer\_pages\_hashed**

The total number of **InnoDB** hashed pages allocated for the table.

* **innodb\_buffer\_pages\_old**

The total number of **InnoDB** old pages allocated for the table.

* **innodb\_buffer\_rows\_cached**

The total number of **InnoDB** cached rows for the table.

#### 28.4.3.31 The schema\_tables\_with\_full\_table\_scans and x$schema\_tables\_with\_full\_table\_scans Views

These views display which tables are being accessed with full table scans. By default, rows are sorted by descending rows scanned.

The [**schema\_tables\_with\_full\_table\_scans**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-tables-with-full-table-scans) and [**x$schema\_tables\_with\_full\_table\_scans**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-schema-tables-with-full-table-scans) views have these columns:

* **object\_schema**

The schema name.

* **object\_name**

The table name.

* **rows\_full\_scanned**

The total number of rows scanned by full scans of the table.

* **latency**

The total wait time of full scans of the table.

#### 28.4.3.32 The schema\_unused\_indexes View

These views display indexes for which there are no events, which indicates that they are not being used. By default, rows are sorted by schema and table.

This view is most useful when the server has been up and processing long enough that its workload is representative. Otherwise, presence of an index in this view may not be meaningful.

The **[schema\_unused\_indexes](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-schema-unused-indexes" \o "28.4.3.32 The schema_unused_indexes View)** view has these columns:

* **object\_schema**

The schema name.

* **object\_name**

The table name.

* **index\_name**

The unused index name.

#### 28.4.3.33 The session and x$session Views

These views are similar to **[processlist](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-processlist" \o "28.4.3.22 The processlist and x$processlist Views)** and **[x$processlist](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-processlist" \o "28.4.3.22 The processlist and x$processlist Views)**, but they filter out background processes to display only user sessions. For descriptions of the columns, see [Section 28.4.3.22, “The processlist and x$processlist Views”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-processlist).

#### 28.4.3.34 The session\_ssl\_status View

For each connection, this view displays the SSL version, cipher, and count of reused SSL sessions.

The **[session\_ssl\_status](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-session-ssl-status" \o "28.4.3.34 The session_ssl_status View)** view has these columns:

* **thread\_id**

The thread ID for the connection.

* **ssl\_version**

The version of SSL used for the connection.

* **ssl\_cipher**

The SSL cipher used for the connection.

* **ssl\_sessions\_reused**

The number of reused SSL sessions for the connection.

#### 28.4.3.35 The statement\_analysis and x$statement\_analysis Views

These views list normalized statements with aggregated statistics. The content mimics the MySQL Enterprise Monitor Query Analysis view. By default, rows are sorted by descending total latency.

The **[statement\_analysis](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statement-analysis" \o "28.4.3.35 The statement_analysis and x$statement_analysis Views)** and **[x$statement\_analysis](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statement-analysis" \o "28.4.3.35 The statement_analysis and x$statement_analysis Views)** views have these columns:

* **query**

The normalized statement string.

* **db**

The default database for the statement, or **NULL** if there is none.

* **full\_scan**

The total number of full table scans performed by occurrences of the statement.

* **exec\_count**

The total number of times the statement has executed.

* **err\_count**

The total number of errors produced by occurrences of the statement.

* **warn\_count**

The total number of warnings produced by occurrences of the statement.

* **total\_latency**

The total wait time of timed occurrences of the statement.

* **max\_latency**

The maximum single wait time of timed occurrences of the statement.

* **avg\_latency**

The average wait time per timed occurrence of the statement.

* **lock\_latency**

The total time waiting for locks by timed occurrences of the statement.

* **rows\_sent**

The total number of rows returned by occurrences of the statement.

* **rows\_sent\_avg**

The average number of rows returned per occurrence of the statement.

* **rows\_examined**

The total number of rows read from storage engines by occurrences of the statement.

* **rows\_examined\_avg**

The average number of rows read from storage engines per occurrence of the statement.

* **rows\_affected**

The total number of rows affected by occurrences of the statement.

* **rows\_affected\_avg**

The average number of rows affected per occurrence of the statement.

* **tmp\_tables**

The total number of internal in-memory temporary tables created by occurrences of the statement.

* **tmp\_disk\_tables**

The total number of internal on-disk temporary tables created by occurrences of the statement.

* **rows\_sorted**

The total number of rows sorted by occurrences of the statement.

* **sort\_merge\_passes**

The total number of sort merge passes by occurrences of the statement.

* **digest**

The statement digest.

* **first\_seen**

The time at which the statement was first seen.

* **last\_seen**

The time at which the statement was most recently seen.

#### 28.4.3.36 The statements\_with\_errors\_or\_warnings and x$statements\_with\_errors\_or\_warnings Views

These views display normalized statements that have produced errors or warnings. By default, rows are sorted by descending error and warning counts.

The [**statements\_with\_errors\_or\_warnings**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-errors-or-warnings) and [**x$statements\_with\_errors\_or\_warnings**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-errors-or-warnings) views have these columns:

* **query**

The normalized statement string.

* **db**

The default database for the statement, or **NULL** if there is none.

* **exec\_count**

The total number of times the statement has executed.

* **errors**

The total number of errors produced by occurrences of the statement.

* **error\_pct**

The percentage of statement occurrences that produced errors.

* **warnings**

The total number of warnings produced by occurrences of the statement.

* **warning\_pct**

The percentage of statement occurrences that produced warnings.

* **first\_seen**

The time at which the statement was first seen.

* **last\_seen**

The time at which the statement was most recently seen.

* **digest**

The statement digest.

#### 28.4.3.37 The statements\_with\_full\_table\_scans and x$statements\_with\_full\_table\_scans Views

These views display normalized statements that have done full table scans. By default, rows are sorted by descending percentage of time a full scan was done and descending total latency.

The [**statements\_with\_full\_table\_scans**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-full-table-scans) and [**x$statements\_with\_full\_table\_scans**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-full-table-scans) views have these columns:

* **query**

The normalized statement string.

* **db**

The default database for the statement, or **NULL** if there is none.

* **exec\_count**

The total number of times the statement has executed.

* **total\_latency**

The total wait time of timed statement events for the statement.

* **no\_index\_used\_count**

The total number of times no index was used to scan the table.

* **no\_good\_index\_used\_count**

The total number of times no good index was used to scan the table.

* **no\_index\_used\_pct**

The percentage of the time no index was used to scan the table.

* **rows\_sent**

The total number of rows returned from the table.

* **rows\_examined**

The total number of rows read from the storage engine for the table.

* **rows\_sent\_avg**

The average number of rows returned from the table.

* **rows\_examined\_avg**

The average number of rows read from the storage engine for the table.

* **first\_seen**

The time at which the statement was first seen.

* **last\_seen**

The time at which the statement was most recently seen.

* **digest**

The statement digest.

#### 28.4.3.38 The statements\_with\_runtimes\_in\_95th\_percentile and x$statements\_with\_runtimes\_in\_95th\_percentile Views

These views list statements with runtimes in the 95th percentile. By default, rows are sorted by descending average latency.

Both views use two helper views, **x$ps\_digest\_avg\_latency\_distribution** and **x$ps\_digest\_95th\_percentile\_by\_avg\_us**.

The [**statements\_with\_runtimes\_in\_95th\_percentile**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) and [**x$statements\_with\_runtimes\_in\_95th\_percentile**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) views have these columns:

* **query**

The normalized statement string.

* **db**

The default database for the statement, or **NULL** if there is none.

* **full\_scan**

The total number of full table scans performed by occurrences of the statement.

* **exec\_count**

The total number of times the statement has executed.

* **err\_count**

The total number of errors produced by occurrences of the statement.

* **warn\_count**

The total number of warnings produced by occurrences of the statement.

* **total\_latency**

The total wait time of timed occurrences of the statement.

* **max\_latency**

The maximum single wait time of timed occurrences of the statement.

* **avg\_latency**

The average wait time per timed occurrence of the statement.

* **rows\_sent**

The total number of rows returned by occurrences of the statement.

* **rows\_sent\_avg**

The average number of rows returned per occurrence of the statement.

* **rows\_examined**

The total number of rows read from storage engines by occurrences of the statement.

* **rows\_examined\_avg**

The average number of rows read from storage engines per occurrence of the statement.

* **first\_seen**

The time at which the statement was first seen.

* **last\_seen**

The time at which the statement was most recently seen.

* **digest**

The statement digest.

#### 28.4.3.39 The statements\_with\_sorting and x$statements\_with\_sorting Views

These views list normalized statements that have performed sorts. By default, rows are sorted by descending total latency.

The **[statements\_with\_sorting](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statements-with-sorting" \o "28.4.3.39 The statements_with_sorting and x$statements_with_sorting Views)** and **[x$statements\_with\_sorting](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statements-with-sorting" \o "28.4.3.39 The statements_with_sorting and x$statements_with_sorting Views)** views have these columns:

* **query**

The normalized statement string.

* **db**

The default database for the statement, or **NULL** if there is none.

* **exec\_count**

The total number of times the statement has executed.

* **total\_latency**

The total wait time of timed occurrences of the statement.

* **sort\_merge\_passes**

The total number of sort merge passes by occurrences of the statement.

* **avg\_sort\_merges**

The average number of sort merge passes per occurrence of the statement.

* **sorts\_using\_scans**

The total number of sorts using table scans by occurrences of the statement.

* **sort\_using\_range**

The total number of sorts using range accesses by occurrences of the statement.

* **rows\_sorted**

The total number of rows sorted by occurrences of the statement.

* **avg\_rows\_sorted**

The average number of rows sorted per occurrence of the statement.

* **first\_seen**

The time at which the statement was first seen.

* **last\_seen**

The time at which the statement was most recently seen.

* **digest**

The statement digest.

#### 28.4.3.40 The statements\_with\_temp\_tables and x$statements\_with\_temp\_tables Views

These views list normalized statements that have used temporary tables. By default, rows are sorted by descending number of on-disk temporary tables used and descending number of in-memory temporary tables used.

The [**statements\_with\_temp\_tables**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-temp-tables) and [**x$statements\_with\_temp\_tables**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-temp-tables) views have these columns:

* **query**

The normalized statement string.

* **db**

The default database for the statement, or **NULL** if there is none.

* **exec\_count**

The total number of times the statement has executed.

* **total\_latency**

The total wait time of timed occurrences of the statement.

* **memory\_tmp\_tables**

The total number of internal in-memory temporary tables created by occurrences of the statement.

* **disk\_tmp\_tables**

The total number of internal on-disk temporary tables created by occurrences of the statement.

* **avg\_tmp\_tables\_per\_query**

The average number of internal temporary tables created per occurrence of the statement.

* **tmp\_tables\_to\_disk\_pct**

The percentage of internal in-memory temporary tables that were converted to on-disk tables.

* **first\_seen**

The time at which the statement was first seen.

* **last\_seen**

The time at which the statement was most recently seen.

* **digest**

The statement digest.

#### 28.4.3.41 The user\_summary and x$user\_summary Views

These views summarize statement activity, file I/O, and connections, grouped by user. By default, rows are sorted by descending total latency.

The **[user\_summary](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-user-summary" \o "28.4.3.41 The user_summary and x$user_summary Views)** and **[x$user\_summary](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-user-summary" \o "28.4.3.41 The user_summary and x$user_summary Views)** views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **statements**

The total number of statements for the user.

* **statement\_latency**

The total wait time of timed statements for the user.

* **statement\_avg\_latency**

The average wait time per timed statement for the user.

* **table\_scans**

The total number of table scans for the user.

* **file\_ios**

The total number of file I/O events for the user.

* **file\_io\_latency**

The total wait time of timed file I/O events for the user.

* **current\_connections**

The current number of connections for the user.

* **total\_connections**

The total number of connections for the user.

* **unique\_hosts**

The number of distinct hosts from which connections for the user have originated.

* **current\_memory**

The current amount of allocated memory for the user.

* **total\_memory\_allocated**

The total amount of allocated memory for the user.

#### 28.4.3.42 The user\_summary\_by\_file\_io and x$user\_summary\_by\_file\_io Views

These views summarize file I/O, grouped by user. By default, rows are sorted by descending total file I/O latency.

The **[user\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-user-summary-by-file-io" \o "28.4.3.42 The user_summary_by_file_io and x$user_summary_by_file_io Views)** and **[x$user\_summary\_by\_file\_io](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-user-summary-by-file-io" \o "28.4.3.42 The user_summary_by_file_io and x$user_summary_by_file_io Views)** views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **ios**

The total number of file I/O events for the user.

* **io\_latency**

The total wait time of timed file I/O events for the user.

#### 28.4.3.43 The user\_summary\_by\_file\_io\_type and x$user\_summary\_by\_file\_io\_type Views

These views summarize file I/O, grouped by user and event type. By default, rows are sorted by user and descending total latency.

The [**user\_summary\_by\_file\_io\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io-type) and [**x$user\_summary\_by\_file\_io\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-file-io-type) views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **event\_name**

The file I/O event name.

* **total**

The total number of occurrences of the file I/O event for the user.

* **latency**

The total wait time of timed occurrences of the file I/O event for the user.

* **max\_latency**

The maximum single wait time of timed occurrences of the file I/O event for the user.

#### 28.4.3.44 The user\_summary\_by\_stages and x$user\_summary\_by\_stages Views

These views summarize stages, grouped by user. By default, rows are sorted by user and descending total stage latency.

The **[user\_summary\_by\_stages](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-user-summary-by-stages" \o "28.4.3.44 The user_summary_by_stages and x$user_summary_by_stages Views)** and **[x$user\_summary\_by\_stages](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-user-summary-by-stages" \o "28.4.3.44 The user_summary_by_stages and x$user_summary_by_stages Views)** views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **event\_name**

The stage event name.

* **total**

The total number of occurrences of the stage event for the user.

* **total\_latency**

The total wait time of timed occurrences of the stage event for the user.

* **avg\_latency**

The average wait time per timed occurrence of the stage event for the user.

#### 28.4.3.45 The user\_summary\_by\_statement\_latency and x$user\_summary\_by\_statement\_latency Views

These views summarize overall statement statistics, grouped by user. By default, rows are sorted by descending total latency.

The [**user\_summary\_by\_statement\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-latency) and [**x$user\_summary\_by\_statement\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-latency) views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **total**

The total number of statements for the user.

* **total\_latency**

The total wait time of timed statements for the user.

* **max\_latency**

The maximum single wait time of timed statements for the user.

* **lock\_latency**

The total time waiting for locks by timed statements for the user.

* **rows\_sent**

The total number of rows returned by statements for the user.

* **rows\_examined**

The total number of rows read from storage engines by statements for the user.

* **rows\_affected**

The total number of rows affected by statements for the user.

* **full\_scans**

The total number of full table scans by statements for the user.

#### 28.4.3.46 The user\_summary\_by\_statement\_type and x$user\_summary\_by\_statement\_type Views

These views summarize informaion about statements executed, grouped by user and statement type. By default, rows are sorted by user and descending total latency.

The [**user\_summary\_by\_statement\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-type) and [**x$user\_summary\_by\_statement\_type**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-user-summary-by-statement-type) views have these columns:

* **user**

The client user name. Rows for which the **USER** column in the underlying Performance Schema table is **NULL** are assumed to be for background threads and are reported with a host name of **background**.

* **statement**

The final component of the statement event name.

* **total**

The total number of occurrences of the statement event for the user.

* **total\_latency**

The total wait time of timed occurrences of the statement event for the user.

* **max\_latency**

The maximum single wait time of timed occurrences of the statement event for the user.

* **lock\_latency**

The total time waiting for locks by timed occurrences of the statement event for the user.

* **rows\_sent**

The total number of rows returned by occurrences of the statement event for the user.

* **rows\_examined**

The total number of rows read from storage engines by occurrences of the statement event for the user.

* **rows\_affected**

The total number of rows affected by occurrences of the statement event for the user.

* **full\_scans**

The total number of full table scans by occurrences of the statement event for the user.

#### 28.4.3.47 The version View

This view provides the current [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema and MySQL server versions.

**Note**

As of MySQL 8.0.18, this view is deprecated; expect it to be removed in a future version of MySQL. Affected applications should be adjusted to use an alternative instead. For example, use the [**VERSION()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_version) function to retrieve the MySQL server version.

The [**version**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version) view has these columns:

* **sys\_version**

The [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema version.

* **mysql\_version**

The MySQL server version.

#### 28.4.3.48 The wait\_classes\_global\_by\_avg\_latency and x$wait\_classes\_global\_by\_avg\_latency Views

These views summarize wait class average latencies, grouped by event class. By default, rows are sorted by descending average latency. Idle events are ignored.

An event class is determined by stripping from the event name everything after the first three components. For example, the class for **wait/io/file/sql/slow\_log** is **wait/io/file**.

The [**wait\_classes\_global\_by\_avg\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-avg-latency) and [**x$wait\_classes\_global\_by\_avg\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-avg-latency) views have these columns:

* **event\_class**

The event class.

* **total**

The total number of occurrences of events in the class.

* **total\_latency**

The total wait time of timed occurrences of events in the class.

* **min\_latency**

The minimum single wait time of timed occurrences of events in the class.

* **avg\_latency**

The average wait time per timed occurrence of events in the class.

* **max\_latency**

The maximum single wait time of timed occurrences of events in the class.

#### 28.4.3.49 The wait\_classes\_global\_by\_latency and x$wait\_classes\_global\_by\_latency Views

These views summarize wait class total latencies, grouped by event class. By default, rows are sorted by descending total latency. Idle events are ignored.

An event class is determined by stripping from the event name everything after the first three components. For example, the class for **wait/io/file/sql/slow\_log** is **wait/io/file**.

The [**wait\_classes\_global\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-latency) and [**x$wait\_classes\_global\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-wait-classes-global-by-latency) views have these columns:

* **event\_class**

The event class.

* **total**

The total number of occurrences of events in the class.

* **total\_latency**

The total wait time of timed occurrences of events in the class.

* **min\_latency**

The minimum single wait time of timed occurrences of events in the class.

* **avg\_latency**

The average wait time per timed occurrence of events in the class.

* **max\_latency**

The maximum single wait time of timed occurrences of events in the class.

#### 28.4.3.50 The waits\_by\_host\_by\_latency and x$waits\_by\_host\_by\_latency Views

These views summarize wait events, grouped by host and event. By default, rows are sorted by host and descending total latency. Idle events are ignored.

The [**waits\_by\_host\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-host-by-latency) and [**x$waits\_by\_host\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-host-by-latency) views have these columns:

* **host**

The host from which the connection originated.

* **event**

The event name.

* **total**

The total number of occurrences of the event for the host.

* **total\_latency**

The total wait time of timed occurrences of the event for the host.

* **avg\_latency**

The average wait time per timed occurrence of the event for the host.

* **max\_latency**

The maximum single wait time of timed occurrences of the event for the host.

#### 28.4.3.51 The waits\_by\_user\_by\_latency and x$waits\_by\_user\_by\_latency Views

These views summarize wait events, grouped by user and event. By default, rows are sorted by user and descending total latency. Idle events are ignored.

The [**waits\_by\_user\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-user-by-latency) and [**x$waits\_by\_user\_by\_latency**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-waits-by-user-by-latency) views have these columns:

* **user**

The user associated with the connection.

* **event**

The event name.

* **total**

The total number of occurrences of the event for the user.

* **total\_latency**

The total wait time of timed occurrences of the event for the user.

* **avg\_latency**

The average wait time per timed occurrence of the event for the user.

* **max\_latency**

The maximum single wait time of timed occurrences of the event for the user.

#### 28.4.3.52 The waits\_global\_by\_latency and x$waits\_global\_by\_latency Views

These views summarize wait events, grouped by event. By default, rows are sorted by descending total latency. Idle events are ignored.

The **[waits\_global\_by\_latency](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-waits-global-by-latency" \o "28.4.3.52 The waits_global_by_latency and x$waits_global_by_latency Views)** and **[x$waits\_global\_by\_latency](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-waits-global-by-latency" \o "28.4.3.52 The waits_global_by_latency and x$waits_global_by_latency Views)** views have these columns:

* **events**

The event name.

* **total**

The total number of occurrences of the event.

* **total\_latency**

The total wait time of timed occurrences of the event.

* **avg\_latency**

The average wait time per timed occurrence of the event.

* **max\_latency**

The maximum single wait time of timed occurrences of the event.

### 28.4.4 sys Schema Stored Procedures

[28.4.4.1 The create\_synonym\_db() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-create-synonym-db)

[28.4.4.2 The diagnostics() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics)

[28.4.4.3 The execute\_prepared\_stmt() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-execute-prepared-stmt)

[28.4.4.4 The ps\_setup\_disable\_background\_threads() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-background-threads)

[28.4.4.5 The ps\_setup\_disable\_consumer() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-consumer)

[28.4.4.6 The ps\_setup\_disable\_instrument() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-instrument)

[28.4.4.7 The ps\_setup\_disable\_thread() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-disable-thread)

[28.4.4.8 The ps\_setup\_enable\_background\_threads() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-background-threads)

[28.4.4.9 The ps\_setup\_enable\_consumer() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-consumer)

[28.4.4.10 The ps\_setup\_enable\_instrument() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-instrument)

[28.4.4.11 The ps\_setup\_enable\_thread() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-enable-thread)

[28.4.4.12 The ps\_setup\_reload\_saved() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-reload-saved)

[28.4.4.13 The ps\_setup\_reset\_to\_default() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-reset-to-default)

[28.4.4.14 The ps\_setup\_save() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-save)

[28.4.4.15 The ps\_setup\_show\_disabled() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-disabled)

[28.4.4.16 The ps\_setup\_show\_disabled\_consumers() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-disabled-consumers)

[28.4.4.17 The ps\_setup\_show\_disabled\_instruments() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-disabled-instruments)

[28.4.4.18 The ps\_setup\_show\_enabled() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-enabled)

[28.4.4.19 The ps\_setup\_show\_enabled\_consumers() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-enabled-consumers)

[28.4.4.20 The ps\_setup\_show\_enabled\_instruments() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-setup-show-enabled-instruments)

[28.4.4.21 The ps\_statement\_avg\_latency\_histogram() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-statement-avg-latency-histogram)

[28.4.4.22 The ps\_trace\_statement\_digest() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-trace-statement-digest)

[28.4.4.23 The ps\_trace\_thread() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-trace-thread)

[28.4.4.24 The ps\_truncate\_all\_tables() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-truncate-all-tables)

[28.4.4.25 The statement\_performance\_analyzer() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statement-performance-analyzer)

[28.4.4.26 The table\_exists() Procedure](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-table-exists)

The following sections describe [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema stored procedures.

#### 28.4.4.1 The create\_synonym\_db() Procedure

Given a schema name, this procedure creates a synonym schema containing views that refer to all the tables and views in the original schema. This can be used, for example, to create a shorter name by which to refer to a schema with a long name (such as **info** rather than **INFORMATION\_SCHEMA**).

##### Parameters

* **in\_db\_name VARCHAR(64)**: The name of the schema for which to create the synonym.
* **in\_synonym VARCHAR(64)**: The name to use for the synonym schema. This schema must not already exist.

##### Example

mysql> **SHOW DATABASES;**

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

| Database |

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

| information\_schema |

| mysql |

| performance\_schema |

| sys |

| world |

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

mysql> **CALL sys.create\_synonym\_db('INFORMATION\_SCHEMA', 'info');**

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

| summary |

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

| Created 63 views in the info database |

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

mysql> **SHOW DATABASES;**

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

| Database |

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

| information\_schema |

| info |

| mysql |

| performance\_schema |

| sys |

| world |

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

mysql> **SHOW FULL TABLES FROM info;**

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

| Tables\_in\_info | Table\_type |

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

| character\_sets | VIEW |

| collation\_character\_set\_applicability | VIEW |

| collations | VIEW |

| column\_privileges | VIEW |

| columns | VIEW |

...

#### 28.4.4.2 The diagnostics() Procedure

Creates a report of the current server status for diagnostic purposes.

This procedure disables binary logging during its execution by manipulating the session value of the **[sql\_log\_bin](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\replication.html" \l "sysvar_sql_log_bin)** system variable. That is a restricted operation, so the procedure requires privileges sufficient to set restricted session variables. See [Section 5.1.9.1, “System Variable Privileges”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\server-administration.html#system-variable-privileges).

Data collected for [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) includes this information:

* Information from the [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view (see [Section 28.4.3.21, “The metrics View”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics))
* Information from other relevant **sys** schema views, such as the one that detemines queries in the 95th percentile
* Information from the **[ndbinfo](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\mysql-cluster.html" \l "mysql-cluster-ndbinfo" \o "23.5.14 ndbinfo: The NDB Cluster Information Database)** schema, if the MySQL server is part of NDB Cluster
* Replication status (both source and replica)

Some of the sys schema views are calculated as initial (optional), overall, and delta values:

* The initial view is the content of the view at the start of the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure. This output is the same as the start values used for the delta view. The initial view is included if the **diagnostics.include\_raw** configuration option is **ON**.
* The overall view is the content of the view at the end of the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure. This output is the same as the end values used for the delta view. The overall view is always included.
* The delta view is the difference from the beginning to the end of procedure execution. The minimum and maximum values are the minimum and maximum values from the end view, respectively. They do not necessarily reflect the minimum and maximum values in the monitored period. Except for the [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view, the delta is calculated only between the first and last outputs.

##### Parameters

* **in\_max\_runtime INT UNSIGNED**: The maximum data collection time in seconds. Use **NULL** to collect data for the default of 60 seconds. Otherwise, use a value greater than 0.
* **in\_interval INT UNSIGNED**: The sleep time between data collections in seconds. Use **NULL** to sleep for the default of 30 seconds. Otherwise, use a value greater than 0.
* **in\_auto\_config ENUM('current', 'medium', 'full')**: The Performance Schema configuration to use. Permitted values are:
  + **current**: Use the current instrument and consumer settings.
  + **medium**: Enable some instruments and consumers.
  + **full**: Enable all instruments and consumers.

**Note**

The more instruments and consumers enabled, the more impact on MySQL server performance. Be careful with the **medium** setting and especially the **full** setting, which has a large performance impact.

Use of the **medium** or **full** setting requires the [**SUPER**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\security.html#priv_super) privilege.

If a setting other than **current** is chosen, the current settings are restored at the end of the procedure.

##### Configuration Options

[**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) operation can be modified using the following configuration options or their corresponding user-defined variables (see [Section 28.4.2.1, “The sys\_config Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config)):

* **debug**, **@sys.debug**

If this option is **ON**, produce debugging output. The default is **OFF**.

* **diagnostics.allow\_i\_s\_tables**, **@sys.diagnostics.allow\_i\_s\_tables**

If this option is **ON**, the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure is permitted to perform table scans on the [**INFORMATION\_SCHEMA.TABLES**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\information-schema.html#information-schema-tables-table) table. This can be expensive if there are many tables. The default is **OFF**.

* **diagnostics.include\_raw**, **@sys.diagnostics.include\_raw**

If this option is **ON**, the [**diagnostics()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-diagnostics) procedure output includes the raw output from querying the [**metrics**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-metrics) view. The default is **OFF**.

* **statement\_truncate\_len**, **@sys.statement\_truncate\_len**

The maximum length of statements returned by the **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)** function. Longer statements are truncated to this length. The default is 64.

##### Example

Create a diagnostics report that starts an iteration every 30 seconds and runs for at most 120 seconds using the current Performance Schema settings:

mysql> **CALL sys.diagnostics(120, 30, 'current');**

To capture the output from the **diagnostics()** procedure in a file as it runs, use the **[mysql](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\programs.html" \l "mysql" \o "4.5.1 mysql — The MySQL Command-Line Client)** client **tee**filename and **notee** commands (see [Section 4.5.1.2, “mysql Client Commands”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\programs.html#mysql-commands)):

mysql> **tee diag.out;**

mysql> **CALL sys.diagnostics(120, 30, 'current');**

mysql> **notee;**

#### 28.4.4.3 The execute\_prepared\_stmt() Procedure

Given an SQL statement as a string, executes it as a prepared statement. The prepared statement is deallocated after execution, so it is not subject to reuse. Thus, this procedure is useful primarily for executing dynamic statements on a one-time basis.

This procedure uses **sys\_execute\_prepared\_stmt** as the prepared statement name. If that statement name exists when the procedure is called, its previous content is destroyed.

##### Parameters

* **in\_query LONGTEXT CHARACTER SET utf8**: The statement string to execute.

##### Configuration Options

[**execute\_prepared\_stmt()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-execute-prepared-stmt) operation can be modified using the following configuration options or their corresponding user-defined variables (see [Section 28.4.2.1, “The sys\_config Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config)):

* **debug**, **@sys.debug**

If this option is **ON**, produce debugging output. The default is **OFF**.

##### Example

mysql> **CALL sys.execute\_prepared\_stmt('SELECT COUNT(\*) FROM mysql.user');**

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

| COUNT(\*) |

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

| 15 |

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

#### 28.4.4.4 The ps\_setup\_disable\_background\_threads() Procedure

Disables Performance Schema instrumentation for all background threads. Produces a result set indicating how many background threads were disabled. Already disabled threads do not count.

##### Parameters

None.

##### Example

mysql> **CALL sys.ps\_setup\_disable\_background\_threads();**

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

| summary |

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

| Disabled 24 background threads |

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

#### 28.4.4.5 The ps\_setup\_disable\_consumer() Procedure

Disables Performance Schema consumers with names that contain the argument. Produces a result set indicating how many consumers were disabled. Already disabled consumers do not count.

##### Parameters

* **consumer VARCHAR(128)**: The value used to match consumer names, which are identified by using **%consumer%** as an operand for a [**LIKE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#operator_like) pattern match.

A value of **''** matches all consumers.

##### Example

Disable all statement consumers:

mysql> **CALL sys.ps\_setup\_disable\_consumer('statement');**

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

| summary |

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

| Disabled 4 consumers |

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

#### 28.4.4.6 The ps\_setup\_disable\_instrument() Procedure

Disables Performance Schema instruments with names that contain the argument. Produces a result set indicating how many instruments were disabled. Already disabled instruments do not count.

##### Parameters

* **in\_pattern VARCHAR(128)**: The value used to match instrument names, which are identified by using **%in\_pattern%** as an operand for a [**LIKE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#operator_like) pattern match.

A value of **''** matches all instruments.

##### Example

Disable a specific instrument:

mysql> **CALL sys.ps\_setup\_disable\_instrument('wait/lock/metadata/sql/mdl');**

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

| summary |

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

| Disabled 1 instrument |

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

Disable all mutex instruments:

mysql> **CALL sys.ps\_setup\_disable\_instrument('mutex');**

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

| summary |

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

| Disabled 177 instruments |

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

#### 28.4.4.7 The ps\_setup\_disable\_thread() Procedure

Given a connection ID, disables Performance Schema instrumentation for the thread. Produces a result set indicating how many threads were disabled. Already disabled threads do not count.

##### Parameters

* **in\_connection\_id BIGINT**: The connection ID. This is a value of the type given in the **PROCESSLIST\_ID** column of the Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table or the **Id** column of [**SHOW PROCESSLIST**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#show-processlist) output.

##### Example

Disable a specific connection by its connection ID:

mysql> **CALL sys.ps\_setup\_disable\_thread(225);**

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

| summary |

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

| Disabled 1 thread |

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

Disable the current connection:

mysql> **CALL sys.ps\_setup\_disable\_thread(CONNECTION\_ID());**

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

| summary |

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

| Disabled 1 thread |

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

#### 28.4.4.8 The ps\_setup\_enable\_background\_threads() Procedure

Enables Performance Schema instrumentation for all background threads. Produces a result set indicating how many background threads were enabled. Already enabled threads do not count.

##### Parameters

None.

##### Example

mysql> **CALL sys.ps\_setup\_enable\_background\_threads();**

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

| summary |

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

| Enabled 24 background threads |

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

#### 28.4.4.9 The ps\_setup\_enable\_consumer() Procedure

Enables Performance Schema consumers with names that contain the argument. Produces a result set indicating how many consumers were enabled. Already enabled consumers do not count.

##### Parameters

* **consumer VARCHAR(128)**: The value used to match consumer names, which are identified by using **%consumer%** as an operand for a [**LIKE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#operator_like) pattern match.

A value of **''** matches all consumers.

##### Example

Enable all statement consumers:

mysql> **CALL sys.ps\_setup\_enable\_consumer('statement');**

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

| summary |

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

| Enabled 4 consumers |

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

#### 28.4.4.10 The ps\_setup\_enable\_instrument() Procedure

Enables Performance Schema instruments with names that contain the argument. Produces a result set indicating how many instruments were enabled. Already enabled instruments do not count.

##### Parameters

* **in\_pattern VARCHAR(128)**: The value used to match instrument names, which are identified by using **%in\_pattern%** as an operand for a [**LIKE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#operator_like) pattern match.

A value of **''** matches all instruments.

##### Example

Enable a specific instrument:

mysql> **CALL sys.ps\_setup\_enable\_instrument('wait/lock/metadata/sql/mdl');**

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

| summary |

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

| Enabled 1 instrument |

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

Enable all mutex instruments:

mysql> **CALL sys.ps\_setup\_enable\_instrument('mutex');**

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

| summary |

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

| Enabled 177 instruments |

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

#### 28.4.4.11 The ps\_setup\_enable\_thread() Procedure

Given a connection ID, enables Performance Schema instrumentation for the thread. Produces a result set indicating how many threads were enabled. Already enabled threads do not count.

##### Parameters

* **in\_connection\_id BIGINT**: The connection ID. This is a value of the type given in the **PROCESSLIST\_ID** column of the Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table or the **Id** column of [**SHOW PROCESSLIST**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#show-processlist) output.

##### Example

Enable a specific connection by its connection ID:

mysql> **CALL sys.ps\_setup\_enable\_thread(225);**

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

| summary |

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

| Enabled 1 thread |

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

Enable the current connection:

mysql> **CALL sys.ps\_setup\_enable\_thread(CONNECTION\_ID());**

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

| summary |

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

| Enabled 1 thread |

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

#### 28.4.4.12 The ps\_setup\_reload\_saved() Procedure

Reloads a Performance Schema configuration saved earlier within the same session using **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)**. For more information, see the description of **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)**.

This procedure disables binary logging during its execution by manipulating the session value of the **[sql\_log\_bin](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\replication.html" \l "sysvar_sql_log_bin)** system variable. That is a restricted operation, so the procedure requires privileges sufficient to set restricted session variables. See [Section 5.1.9.1, “System Variable Privileges”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\server-administration.html#system-variable-privileges).

##### Parameters

None.

#### 28.4.4.13 The ps\_setup\_reset\_to\_default() Procedure

Resets the Performance Schema configuration to its default settings.

##### Parameters

* **in\_verbose BOOLEAN**: Whether to display information about each setup stage during procedure execution. This includes the SQL statements executed.

##### Example

mysql> **CALL sys.ps\_setup\_reset\_to\_default(TRUE)\G**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

status: Resetting: setup\_actors

DELETE

FROM performance\_schema.setup\_actors

WHERE NOT (HOST = '%' AND USER = '%' AND ROLE = '%')

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

status: Resetting: setup\_actors

INSERT IGNORE INTO performance\_schema.setup\_actors

VALUES ('%', '%', '%')

...

#### 28.4.4.14 The ps\_setup\_save() Procedure

Saves the current Performance Schema configuration. This enables you to alter the configuration temporarily for debugging or other purposes, then restore it to the previous state by invoking the **[ps\_setup\_reload\_saved()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-reload-saved" \o "28.4.4.12 The ps_setup_reload_saved() Procedure)** procedure.

To prevent other simultaneous calls to save the configuration, **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)** acquires an advisory lock named **sys.ps\_setup\_save** by calling the [**GET\_LOCK()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_get-lock) function. **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)** takes a timeout parameter to indicate how many seconds to wait if the lock already exists (which indicates that some other session has a saved configuration outstanding). If the timeout expires without obtaining the lock, **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)** fails.

It is intended you call **[ps\_setup\_reload\_saved()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-reload-saved" \o "28.4.4.12 The ps_setup_reload_saved() Procedure)** later within the same session as **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)** because the configuration is saved in **TEMPORARY** tables. **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)** drops the temporary tables and releases the lock. If you end your session without invoking **[ps\_setup\_save()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-setup-save" \o "28.4.4.14 The ps_setup_save() Procedure)**, the tables and lock disappear automatically.

This procedure disables binary logging during its execution by manipulating the session value of the **[sql\_log\_bin](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\replication.html" \l "sysvar_sql_log_bin)** system variable. That is a restricted operation, so the procedure requires privileges sufficient to set restricted session variables. See [Section 5.1.9.1, “System Variable Privileges”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\server-administration.html#system-variable-privileges).

##### Parameters

* **in\_timeout INT**: How many seconds to wait to obtain the **sys.ps\_setup\_save** lock. A negative timeout value means infinite timeout.

##### Example

mysql> **CALL sys.ps\_setup\_save(10);**

... ***make Performance Schema configuration changes*** ...

mysql> **CALL sys.ps\_setup\_reload\_saved();**

#### 28.4.4.15 The ps\_setup\_show\_disabled() Procedure

Displays all currently disabled Performance Schema configuration.

##### Parameters

* **in\_show\_instruments BOOLEAN**: Whether to display disabled instruments. This might be a long list.
* **in\_show\_threads BOOLEAN**: Whether to display disabled threads.

##### Example

mysql> CALL sys.ps\_setup\_show\_disabled(TRUE, TRUE);

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

| performance\_schema\_enabled |

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

| 1 |

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

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

| enabled\_users |

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

| '%'@'%' |

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

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

| object\_type | objects | enabled | timed |

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

| EVENT | mysql.% | NO | NO |

| EVENT | performance\_schema.% | NO | NO |

| EVENT | information\_schema.% | NO | NO |

| FUNCTION | mysql.% | NO | NO |

| FUNCTION | performance\_schema.% | NO | NO |

| FUNCTION | information\_schema.% | NO | NO |

| PROCEDURE | mysql.% | NO | NO |

| PROCEDURE | performance\_schema.% | NO | NO |

| PROCEDURE | information\_schema.% | NO | NO |

| TABLE | mysql.% | NO | NO |

| TABLE | performance\_schema.% | NO | NO |

| TABLE | information\_schema.% | NO | NO |

| TRIGGER | mysql.% | NO | NO |

| TRIGGER | performance\_schema.% | NO | NO |

| TRIGGER | information\_schema.% | NO | NO |

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

...

#### 28.4.4.16 The ps\_setup\_show\_disabled\_consumers() Procedure

Displays all currently disabled Performance Schema consumers.

##### Parameters

None.

##### Example

mysql> **CALL sys.ps\_setup\_show\_disabled\_consumers();**

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

| disabled\_consumers |

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

| events\_stages\_current |

| events\_stages\_history |

| events\_stages\_history\_long |

| events\_statements\_history |

| events\_statements\_history\_long |

| events\_transactions\_history |

| events\_transactions\_history\_long |

| events\_waits\_current |

| events\_waits\_history |

| events\_waits\_history\_long |

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

#### 28.4.4.17 The ps\_setup\_show\_disabled\_instruments() Procedure

Displays all currently disabled Performance Schema instruments. This might be a long list.

##### Parameters

None.

##### Example

mysql> **CALL sys.ps\_setup\_show\_disabled\_instruments()\G**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

disabled\_instruments: wait/synch/mutex/sql/TC\_LOG\_MMAP::LOCK\_tc

timed: NO

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 2. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

disabled\_instruments: wait/synch/mutex/sql/THD::LOCK\_query\_plan

timed: NO

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 3. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

disabled\_instruments: wait/synch/mutex/sql/MYSQL\_BIN\_LOG::LOCK\_commit

timed: NO

...

#### 28.4.4.18 The ps\_setup\_show\_enabled() Procedure

Displays all currently enabled Performance Schema configuration.

##### Parameters

* **in\_show\_instruments BOOLEAN**: Whether to display enabled instruments. This might be a long list.
* **in\_show\_threads BOOLEAN**: Whether to display enabled threads.

##### Example

mysql> **CALL sys.ps\_setup\_show\_enabled(FALSE, FALSE);**

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

| performance\_schema\_enabled |

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

| 1 |

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

1 row in set (0.01 sec)

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

| enabled\_users |

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

| '%'@'%' |

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

1 row in set (0.01 sec)

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

| object\_type | objects | enabled | timed |

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

| EVENT | %.% | YES | YES |

| FUNCTION | %.% | YES | YES |

| PROCEDURE | %.% | YES | YES |

| TABLE | %.% | YES | YES |

| TRIGGER | %.% | YES | YES |

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

5 rows in set (0.02 sec)

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

| enabled\_consumers |

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

| events\_statements\_current |

| events\_statements\_history |

| events\_transactions\_current |

| events\_transactions\_history |

| global\_instrumentation |

| statements\_digest |

| thread\_instrumentation |

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

#### 28.4.4.19 The ps\_setup\_show\_enabled\_consumers() Procedure

Displays all currently enabled Performance Schema consumers.

##### Parameters

None.

##### Example

mysql> **CALL sys.ps\_setup\_show\_enabled\_consumers();**

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

| enabled\_consumers |

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

| events\_statements\_current |

| events\_statements\_history |

| events\_transactions\_current |

| events\_transactions\_history |

| global\_instrumentation |

| statements\_digest |

| thread\_instrumentation |

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

#### 28.4.4.20 The ps\_setup\_show\_enabled\_instruments() Procedure

Displays all currently enabled Performance Schema instruments. This might be a long list.

##### Parameters

None.

##### Example

mysql> **CALL sys.ps\_setup\_show\_enabled\_instruments()\G**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

enabled\_instruments: wait/io/file/sql/map

timed: YES

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 2. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

enabled\_instruments: wait/io/file/sql/binlog

timed: YES

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 3. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

enabled\_instruments: wait/io/file/sql/binlog\_cache

timed: YES

...

#### 28.4.4.21 The ps\_statement\_avg\_latency\_histogram() Procedure

Displays a textual histogram graph of the average latency values across all normalized statements tracked within the Performance Schema **[events\_statements\_summary\_by\_digest](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-statement-summary-tables" \o "27.12.20.3 Statement Summary Tables)** table.

This procedure can be used to display a very high-level picture of the latency distribution of statements running within this MySQL instance.

##### Parameters

None.

##### Example

The histogram output in statement units. For example, **\* = 2 units** in the histogram legend means that each **\*** character represents 2 statements.

mysql> **CALL sys.ps\_statement\_avg\_latency\_histogram()\G**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Performance Schema Statement Digest Average Latency Histogram:

. = 1 unit

\* = 2 units

# = 3 units

(0 - 66ms) 88 | #############################

(66 - 133ms) 14 | ..............

(133 - 199ms) 4 | ....

(199 - 265ms) 5 | \*\*

(265 - 332ms) 1 | .

(332 - 398ms) 0 |

(398 - 464ms) 1 | .

(464 - 531ms) 0 |

(531 - 597ms) 0 |

(597 - 663ms) 0 |

(663 - 730ms) 0 |

(730 - 796ms) 0 |

(796 - 863ms) 0 |

(863 - 929ms) 0 |

(929 - 995ms) 0 |

(995 - 1062ms) 0 |

Total Statements: 114; Buckets: 16; Bucket Size: 66 ms;

#### 28.4.4.22 The ps\_trace\_statement\_digest() Procedure

Traces all Performance Schema instrumentation for a specific statement digest.

If you find a statement of interest within the Performance Schema **[events\_statements\_summary\_by\_digest](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-statement-summary-tables" \o "27.12.20.3 Statement Summary Tables)** table, specify its **DIGEST** column MD5 value to this procedure and indicate the polling duration and interval. The result is a report of all statistics tracked within Performance Schema for that digest for the interval.

The procedure also attempts to execute [**EXPLAIN**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#explain) for the longest running example of the digest during the interval. This attempt might fail because the Performance Schema truncates long **SQL\_TEXT** values. Consequently, [**EXPLAIN**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#explain) fails, due to parse errors.

This procedure disables binary logging during its execution by manipulating the session value of the **[sql\_log\_bin](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\replication.html" \l "sysvar_sql_log_bin)** system variable. That is a restricted operation, so the procedure requires privileges sufficient to set restricted session variables. See [Section 5.1.9.1, “System Variable Privileges”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\server-administration.html#system-variable-privileges).

##### Parameters

* **in\_digest VARCHAR(32)**: The statement digest identifier to analyze.
* **in\_runtime INT**: How long to run the analysis in seconds.
* **in\_interval DECIMAL(2,2)**: The analysis interval in seconds (which can be fractional) at which to try to take snapshots.
* **in\_start\_fresh BOOLEAN**: Whether to truncate the Performance Schema [**events\_statements\_history\_long**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-events-statements-history-long-table) and [**events\_stages\_history\_long**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-events-stages-history-long-table) tables before starting.
* **in\_auto\_enable BOOLEAN**: Whether to automatically enable required consumers.

##### Example

mysql> **CALL sys.ps\_trace\_statement\_digest('891ec6860f98ba46d89dd20b0c03652c', 10, 0.1, TRUE, TRUE);**

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

| SUMMARY STATISTICS |

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

| SUMMARY STATISTICS |

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

1 row in set (9.11 sec)

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

| executions | exec\_time | lock\_time | rows\_sent | rows\_examined | tmp\_tables | full\_scans |

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

| 21 | 4.11 ms | 2.00 ms | 0 | 21 | 0 | 0 |

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

1 row in set (9.11 sec)

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

| event\_name | count | latency |

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

| stage/sql/statistics | 16 | 546.92 us |

| stage/sql/freeing items | 18 | 520.11 us |

| stage/sql/init | 51 | 466.80 us |

...

| stage/sql/cleaning up | 18 | 11.92 us |

| stage/sql/executing | 16 | 6.95 us |

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

17 rows in set (9.12 sec)

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

| LONGEST RUNNING STATEMENT |

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

| LONGEST RUNNING STATEMENT |

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

1 row in set (9.16 sec)

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

| thread\_id | exec\_time | lock\_time | rows\_sent | rows\_examined | tmp\_tables | full\_scan |

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

| 166646 | 618.43 us | 1.00 ms | 0 | 1 | 0 | 0 |

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

1 row in set (9.16 sec)

# Truncated for clarity...

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

| sql\_text |

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

| select hibeventhe0\_.id as id1382\_, hibeventhe0\_.createdTime ... |

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

1 row in set (9.17 sec)

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

| event\_name | latency |

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

| stage/sql/init | 8.61 us |

| stage/sql/init | 331.07 ns |

...

| stage/sql/freeing items | 30.46 us |

| stage/sql/cleaning up | 662.13 ns |

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

18 rows in set (9.23 sec)

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

| id | select\_type | table | type | possible\_keys | key | key\_len | ref | rows | Extra |

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

| 1 | SIMPLE | hibeventhe0\_ | const | fixedTime | fixedTime | 775 | const,const | 1 | NULL |

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

1 row in set (9.27 sec)

Query OK, 0 rows affected (9.28 sec)

#### 28.4.4.23 The ps\_trace\_thread() Procedure

Dumps all Performance Schema data for an instrumented thread to a .dot formatted graph file (for the DOT graph description language). Each result set returned from the procedure should be used for a complete graph.

This procedure disables binary logging during its execution by manipulating the session value of the **[sql\_log\_bin](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\replication.html" \l "sysvar_sql_log_bin)** system variable. That is a restricted operation, so the procedure requires privileges sufficient to set restricted session variables. See [Section 5.1.9.1, “System Variable Privileges”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\server-administration.html#system-variable-privileges).

##### Parameters

* **in\_thread\_id INT**: The thread to trace.
* **in\_outfile VARCHAR(255)**: The name to use for the .dot output file.
* **in\_max\_runtime DECIMAL(20,2)**: The maximum number of seconds (which can be fractional) to collect data. Use **NULL** to collect data for the default of 60 seconds.
* **in\_interval DECIMAL(20,2)**: The number of seconds (which can be fractional) to sleep between data collections. Use **NULL** to sleep for the default of 1 second.
* **in\_start\_fresh BOOLEAN**: Whether to reset all Performance Schema data before tracing.
* **in\_auto\_setup BOOLEAN**: Whether to disable all other threads and enable all instruments and consumers. This also resets the settings at the end of the run.
* **in\_debug BOOLEAN**: Whether to include **file:lineno** information in the graph.

##### Example

mysql> **CALL sys.ps\_trace\_thread(25, CONCAT('/tmp/stack-', REPLACE(NOW(), ' ', '-'), '.dot'), NULL, NULL, TRUE, TRUE, TRUE);**

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

| summary |

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

| Disabled 1 thread |

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

1 row in set (0.00 sec)

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

| Info |

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

| Data collection starting for THREAD\_ID = 25 |

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

1 row in set (0.03 sec)

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

| Info |

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

| Stack trace written to /tmp/stack-2014-02-16-21:18:41.dot |

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

1 row in set (60.07 sec)

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

| Convert to PDF |

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

| dot -Tpdf -o /tmp/stack\_25.pdf /tmp/stack-2014-02-16-21:18:41.dot |

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

1 row in set (60.07 sec)

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

| Convert to PNG |

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

| dot -Tpng -o /tmp/stack\_25.png /tmp/stack-2014-02-16-21:18:41.dot |

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

1 row in set (60.07 sec)

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

| summary |

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

| Enabled 1 thread |

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

1 row in set (60.32 sec)

#### 28.4.4.24 The ps\_truncate\_all\_tables() Procedure

Truncates all Performance Schema summary tables, resetting all aggregated instrumentation as a snapshot. Produces a result set indicating how many tables were truncated.

##### Parameters

* **in\_verbose BOOLEAN**: Whether to display each [**TRUNCATE TABLE**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#truncate-table) statement before executing it.

##### Example

mysql> **CALL sys.ps\_truncate\_all\_tables(FALSE);**

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

| summary |

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

| Truncated 49 tables |

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

#### 28.4.4.25 The statement\_performance\_analyzer() Procedure

Creates a report of the statements running on the server. The views are calculated based on the overall and/or delta activity.

This procedure disables binary logging during its execution by manipulating the session value of the **[sql\_log\_bin](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\replication.html" \l "sysvar_sql_log_bin)** system variable. That is a restricted operation, so the procedure requires privileges sufficient to set restricted session variables. See [Section 5.1.9.1, “System Variable Privileges”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\server-administration.html#system-variable-privileges).

##### Parameters

* **in\_action ENUM('snapshot', 'overall', 'delta', 'create\_tmp', 'create\_table', 'save', 'cleanup')**: The action to take. These values are permitted:
  + **snapshot**: Store a snapshot. The default is to make a snapshot of the current content of the Performance Schema **[events\_statements\_summary\_by\_digest](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-statement-summary-tables" \o "27.12.20.3 Statement Summary Tables)** table. By setting **in\_table**, this can be overwritten to copy the content of the specified table. The snapshot is stored in the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema **tmp\_digests** temporary table.
  + **overall**: Generate an analysis based on the content of the table specified by **in\_table**. For the overall analysis, **in\_table** can be [**NOW()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_now) to use a fresh snapshot. This overwrites an existing snapshot. Use **NULL** for **in\_table** to use the existing snapshot. If **in\_table** is **NULL** and no snapshot exists, a new snapshot is created. The **in\_views** parameter and the **statement\_performance\_analyzer.limit** configuration option affect the operation of this procedure.
  + **delta**: Generate a delta analysis. The delta is calculated between the reference table specified by **in\_table** and the snapshot, which must exist. This action uses the [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema **tmp\_digests\_delta** temporary table. The **in\_views** parameter and the **statement\_performance\_analyzer.limit** configuration option affect the operation of this procedure.
  + **create\_table**: Create a regular table suitable for storing the snapshot for later use (for example, for calculating deltas).
  + **create\_tmp**: Create a temporary table suitable for storing the snapshot for later use (for example, for calculating deltas).
  + **save**: Save the snapshot in the table specified by **in\_table**. The table must exist and have the correct structure. If no snapshot exists, a new snapshot is created.
  + **cleanup**: Remove the temporary tables used for the snapshot and delta.
* **in\_table VARCHAR(129)**: The table parameter used for some of the actions specified by the **in\_action** parameter. Use the format ***db\_name.tbl\_name*** or ***tbl\_name*** without using any backtick (**`**) identifier-quoting characters. Periods (**.**) are not supported in database and table names.

The meaning of the **in\_table** value for each **in\_action** value is detailed in the individual **in\_action** value descriptions.

* **in\_views SET ('with\_runtimes\_in\_95th\_percentile', 'analysis', 'with\_errors\_or\_warnings', 'with\_full\_table\_scans', 'with\_sorting', 'with\_temp\_tables', 'custom')**: Which views to include. This parameter is a **SET** value, so it can contain multiple view names, separated by commas. The default is to include all views except **custom**. The following values are permitted:
  + **with\_runtimes\_in\_95th\_percentile**: Use the [**statements\_with\_runtimes\_in\_95th\_percentile**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statements-with-runtimes-in-95th-percentile) view.
  + **analysis**: Use the **[statement\_analysis](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statement-analysis" \o "28.4.3.35 The statement_analysis and x$statement_analysis Views)** view.
  + **with\_errors\_or\_warnings**: Use the **[statements\_with\_errors\_or\_warnings](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statements-with-errors-or-warnings" \o "28.4.3.36 The statements_with_errors_or_warnings and x$statements_with_errors_or_warnings Views)** view.
  + **with\_full\_table\_scans**: Use the **[statements\_with\_full\_table\_scans](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statements-with-full-table-scans" \o "28.4.3.37 The statements_with_full_table_scans and x$statements_with_full_table_scans Views)** view.
  + **with\_sorting**: Use the **[statements\_with\_sorting](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statements-with-sorting" \o "28.4.3.39 The statements_with_sorting and x$statements_with_sorting Views)** view.
  + **with\_temp\_tables**: Use the **[statements\_with\_temp\_tables](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-statements-with-temp-tables" \o "28.4.3.40 The statements_with_temp_tables and x$statements_with_temp_tables Views)** view.
  + **custom**: Use a custom view. This view must be specified using the **statement\_performance\_analyzer.view** configuration option to name a query or an existing view.

##### Configuration Options

[**statement\_performance\_analyzer()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-statement-performance-analyzer) operation can be modified using the following configuration options or their corresponding user-defined variables (see [Section 28.4.2.1, “The sys\_config Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config)):

* **debug**, **@sys.debug**

If this option is **ON**, produce debugging output. The default is **OFF**.

* **statement\_performance\_analyzer.limit**, **@sys.statement\_performance\_analyzer.limit**

The maximum number of rows to return for views that have no built-in limit. The default is 100.

* **statement\_performance\_analyzer.view**, **@sys.statement\_performance\_analyzer.view**

The custom query or view to be used. If the option value contains a space, it is interpreted as a query. Otherwise, it must be the name of an existing view that queries the Performance Schema **[events\_statements\_summary\_by\_digest](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-statement-summary-tables" \o "27.12.20.3 Statement Summary Tables)** table. There cannot be any **LIMIT** clause in the query or view definition if the **statement\_performance\_analyzer.limit** configuration option is greater than 0. If specifying a view, use the same format as for the **in\_table** parameter. The default is **NULL** (no custom view defined).

##### Example

To create a report with the queries in the 95th percentile since the last truncation of **[events\_statements\_summary\_by\_digest](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\performance-schema.html" \l "performance-schema-statement-summary-tables" \o "27.12.20.3 Statement Summary Tables)** and with a one-minute delta period:

1. Create a temporary table to store the initial snapshot.
2. Create the initial snapshot.
3. Save the initial snapshot in the temporary table.
4. Wait one minute.
5. Create a new snapshot.
6. Perform analysis based on the new snapshot.
7. Perform analysis based on the delta between the initial and new snapshots.

mysql> **CALL sys.statement\_performance\_analyzer('create\_tmp', 'mydb.tmp\_digests\_ini', NULL);**

Query OK, 0 rows affected (0.08 sec)

mysql> **CALL sys.statement\_performance\_analyzer('snapshot', NULL, NULL);**

Query OK, 0 rows affected (0.02 sec)

mysql> **CALL sys.statement\_performance\_analyzer('save', 'mydb.tmp\_digests\_ini', NULL);**

Query OK, 0 rows affected (0.00 sec)

mysql> **DO SLEEP(60);**

Query OK, 0 rows affected (1 min 0.00 sec)

mysql> **CALL sys.statement\_performance\_analyzer('snapshot', NULL, NULL);**

Query OK, 0 rows affected (0.02 sec)

mysql> **CALL sys.statement\_performance\_analyzer('overall', NULL, 'with\_runtimes\_in\_95th\_percentile');**

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

| Next Output |

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

| Queries with Runtime in 95th Percentile |

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

1 row in set (0.05 sec)

...

mysql> **CALL sys.statement\_performance\_analyzer('delta', 'mydb.tmp\_digests\_ini', 'with\_runtimes\_in\_95th\_percentile');**

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

| Next Output |

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

| Queries with Runtime in 95th Percentile |

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

1 row in set (0.03 sec)

...

Create an overall report of the 95th percentile queries and the top 10 queries with full table scans:

mysql> **CALL sys.statement\_performance\_analyzer('snapshot', NULL, NULL);**

Query OK, 0 rows affected (0.01 sec)

mysql> **SET @sys.statement\_performance\_analyzer.limit = 10;**

Query OK, 0 rows affected (0.00 sec)

mysql> **CALL sys.statement\_performance\_analyzer('overall', NULL, 'with\_runtimes\_in\_95th\_percentile,with\_full\_table\_scans');**

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

| Next Output |

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

| Queries with Runtime in 95th Percentile |

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

1 row in set (0.01 sec)

...

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

| Next Output |

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

| Top 10 Queries with Full Table Scan |

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

1 row in set (0.09 sec)

...

Use a custom view showing the top 10 queries sorted by total execution time, refreshing the view every minute using the **watch** command in Linux:

mysql> **CREATE OR REPLACE VIEW mydb.my\_statements AS**

**SELECT sys.format\_statement(DIGEST\_TEXT) AS query,**

**SCHEMA\_NAME AS db,**

**COUNT\_STAR AS exec\_count,**

**sys.format\_time(SUM\_TIMER\_WAIT) AS total\_latency,**

**sys.format\_time(AVG\_TIMER\_WAIT) AS avg\_latency,**

**ROUND(IFNULL(SUM\_ROWS\_SENT / NULLIF(COUNT\_STAR, 0), 0)) AS rows\_sent\_avg,**

**ROUND(IFNULL(SUM\_ROWS\_EXAMINED / NULLIF(COUNT\_STAR, 0), 0)) AS rows\_examined\_avg,**

**ROUND(IFNULL(SUM\_ROWS\_AFFECTED / NULLIF(COUNT\_STAR, 0), 0)) AS rows\_affected\_avg,**

**DIGEST AS digest**

**FROM performance\_schema.events\_statements\_summary\_by\_digest**

**ORDER BY SUM\_TIMER\_WAIT DESC;**

Query OK, 0 rows affected (0.10 sec)

mysql> **CALL sys.statement\_performance\_analyzer('create\_table', 'mydb.digests\_prev', NULL);**

Query OK, 0 rows affected (0.10 sec)

shell> **watch -n 60 "mysql sys --table -e \"**

> **SET @sys.statement\_performance\_analyzer.view = 'mydb.my\_statements';**

> **SET @sys.statement\_performance\_analyzer.limit = 10;**

> **CALL statement\_performance\_analyzer('snapshot', NULL, NULL);**

> **CALL statement\_performance\_analyzer('delta', 'mydb.digests\_prev', 'custom');**

> **CALL statement\_performance\_analyzer('save', 'mydb.digests\_prev', NULL);**

> **\""**

Every 60.0s: mysql sys --table -e " ... Mon Dec 22 10:58:51 2014

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

| Next Output |

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

| Top 10 Queries Using Custom View |

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

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

| query | db | exec\_count | total\_latency | avg\_latency | rows\_sent\_avg | rows\_examined\_avg | rows\_affected\_avg | digest |

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

...

#### 28.4.4.26 The table\_exists() Procedure

Tests whether a given table exists as a regular table, a **TEMPORARY** table, or a view. The procedure returns the table type in an **OUT** parameter. If both a temporary and a permanent table exist with the given name, **TEMPORARY** is returned.

##### Parameters

* **in\_db VARCHAR(64)**: The name of the database in which to check for table existance.
* **in\_table VARCHAR(64)**: The name of the table to check the existance of.
* **out\_exists ENUM('', 'BASE TABLE', 'VIEW', 'TEMPORARY')**: The return value. This is an **OUT** parameter, so it must be a variable into which the table type can be stored. When the procedure returns, the variable has one of the following values to indicate whether the table exists:
  + **''**: The table name does not exist as a base table, **TEMPORARY** table, or view.
  + **BASE TABLE**: The table name exists as a base (permanent) table.
  + **VIEW**: The table name exists as a view.
  + **TEMPORARY**: The table name exists as a **TEMPORARY** table.

##### Example

mysql> **CREATE DATABASE db1;**

Query OK, 1 row affected (0.01 sec)

mysql> **USE db1;**

Database changed

mysql> **CREATE TABLE t1 (id INT PRIMARY KEY);**

Query OK, 0 rows affected (0.03 sec)

mysql> **CREATE TABLE t2 (id INT PRIMARY KEY);**

Query OK, 0 rows affected (0.20 sec)

mysql> **CREATE view v\_t1 AS SELECT \* FROM t1;**

Query OK, 0 rows affected (0.02 sec)

mysql> **CREATE TEMPORARY TABLE t1 (id INT PRIMARY KEY);**

Query OK, 0 rows affected (0.00 sec)

mysql> **CALL sys.table\_exists('db1', 't1', @exists); SELECT @exists;**

Query OK, 0 rows affected (0.01 sec)

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

| @exists |

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

| TEMPORARY |

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

1 row in set (0.00 sec)

mysql> **CALL sys.table\_exists('db1', 't2', @exists); SELECT @exists;**

Query OK, 0 rows affected (0.02 sec)

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

| @exists |

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

| BASE TABLE |

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

1 row in set (0.00 sec)

mysql> **CALL sys.table\_exists('db1', 'v\_t1', @exists); SELECT @exists;**

Query OK, 0 rows affected (0.02 sec)

+---------+

| @exists |

+---------+

| VIEW |

+---------+

1 row in set (0.00 sec)

mysql> **CALL sys.table\_exists('db1', 't3', @exists); SELECT @exists;**

Query OK, 0 rows affected (0.00 sec)

+---------+

| @exists |

+---------+

| |

+---------+

1 row in set (0.00 sec)

### 28.4.5 sys Schema Stored Functions

[28.4.5.1 The extract\_schema\_from\_file\_name() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-extract-schema-from-file-name)

[28.4.5.2 The extract\_table\_from\_file\_name() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-extract-table-from-file-name)

[28.4.5.3 The format\_bytes() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-bytes)

[28.4.5.4 The format\_path() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-path)

[28.4.5.5 The format\_statement() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-statement)

[28.4.5.6 The format\_time() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-time)

[28.4.5.7 The list\_add() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-list-add)

[28.4.5.8 The list\_drop() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-list-drop)

[28.4.5.9 The ps\_is\_account\_enabled() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-account-enabled)

[28.4.5.10 The ps\_is\_consumer\_enabled() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-consumer-enabled)

[28.4.5.11 The ps\_is\_instrument\_default\_enabled() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-instrument-default-enabled)

[28.4.5.12 The ps\_is\_instrument\_default\_timed() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-instrument-default-timed)

[28.4.5.13 The ps\_is\_thread\_instrumented() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-is-thread-instrumented)

[28.4.5.14 The ps\_thread\_account() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-account)

[28.4.5.15 The ps\_thread\_id() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-id)

[28.4.5.16 The ps\_thread\_stack() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-stack)

[28.4.5.17 The ps\_thread\_trx\_info() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-trx-info)

[28.4.5.18 The quote\_identifier() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-quote-identifier)

[28.4.5.19 The sys\_get\_config() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-get-config)

[28.4.5.20 The version\_major() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version-major)

[28.4.5.21 The version\_minor() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version-minor)

[28.4.5.22 The version\_patch() Function](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-version-patch)

The following sections describe [**sys**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html) schema stored functions.

#### 28.4.5.1 The extract\_schema\_from\_file\_name() Function

Given a file path name, returns the path component that represents the schema name. This function assumes that the file name lies within the schema directory. For this reason, it does not work with partitions or tables defined using their own **DATA\_DIRECTORY** table option.

This function is useful when extracting file I/O information from the Performance Schema that includes file path names. It provides a convenient way to display schema names, which can be more easily understood than full path names, and can be used in joins against object schema names.

##### Parameters

* **path VARCHAR(512)**: The full path to a data file from which to extract the schema name.

##### Return Value

A **VARCHAR(64)** value.

##### Example

mysql> **SELECT sys.extract\_schema\_from\_file\_name('/usr/local/mysql/data/world/City.ibd');**

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

| sys.extract\_schema\_from\_file\_name('/usr/local/mysql/data/world/City.ibd') |

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

| world |

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

#### 28.4.5.2 The extract\_table\_from\_file\_name() Function

Given a file path name, returns the path component that represents the table name.

This function is useful when extracting file I/O information from the Performance Schema that includes file path names. It provides a convenient way to display table names, which can be more easily understood than full path names, and can be used in joins against object table names.

##### Parameters

* **path VARCHAR(512)**: The full path to a data file from which to extract the table name.

##### Return Value

A **VARCHAR(64)** value.

##### Example

mysql> **SELECT sys.extract\_table\_from\_file\_name('/usr/local/mysql/data/world/City.ibd');**

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

| sys.extract\_table\_from\_file\_name('/usr/local/mysql/data/world/City.ibd') |

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

| City |

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

#### 28.4.5.3 The format\_bytes() Function

**Note**

As of MySQL 8.0.16, **[format\_bytes()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-bytes" \o "28.4.5.3 The format_bytes() Function)** is deprecated; expect it to be removed in a future version of MySQL. Applications that use it should be migrated to use the built-in [**FORMAT\_BYTES()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_format-bytes) function instead. See [Section 12.22, “Performance Schema Functions”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#performance-schema-functions)

Given a byte count, converts it to human-readable format and returns a string consisting of a value and a units indicator. Depending on the size of the value, the units part is **bytes**, **KiB** (kibibytes), **MiB** (mebibytes), **GiB** (gibibytes), **TiB** (tebibytes), or **PiB** (pebibytes).

##### Parameters

* **bytes TEXT**: The byte count to format.

##### Return Value

A **TEXT** value.

##### Example

mysql> **SELECT sys.format\_bytes(512), sys.format\_bytes(18446644073709551615);**

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

| sys.format\_bytes(512) | sys.format\_bytes(18446644073709551615) |

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

| 512 bytes | 16383.91 PiB |

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

#### 28.4.5.4 The format\_path() Function

Given a path name, returns the modified path name after replacing subpaths that match the values of the following system variables, in order:

datadir

tmpdir

slave\_load\_tmpdir

innodb\_data\_home\_dir

innodb\_log\_group\_home\_dir

innodb\_undo\_directory

basedir

A value that matches the value of system variable ***sysvar*** is replaced with the string **@@GLOBAL.*sysvar***.

##### Parameters

* **path VARCHAR(512)**: The path name to format.

##### Return Value

A **VARCHAR(512) CHARACTER SET utf8** value.

##### Example

mysql> **SELECT sys.format\_path('/usr/local/mysql/data/world/City.ibd');**

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

| sys.format\_path('/usr/local/mysql/data/world/City.ibd') |

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

| /usr/local/mysql/data/world/City.ibd |

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

#### 28.4.5.5 The format\_statement() Function

Given a string (normally representing an SQL statement), reduces it to the length given by the **statement\_truncate\_len** configuration option, and returns the result. No truncation occurs if the string is shorter than **statement\_truncate\_len**. Otherwise, the middle part of the string is replaced by an ellipsis (**...**).

This function is useful for formatting possibly lengthy statements retrieved from Performance Schema tables to a known fixed maximum length.

##### Parameters

* **statement LONGTEXT**: The statement to format.

##### Configuration Options

[**format\_statement()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-format-statement) operation can be modified using the following configuration options or their corresponding user-defined variables (see [Section 28.4.2.1, “The sys\_config Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config)):

* **statement\_truncate\_len**, **@sys.statement\_truncate\_len**

The maximum length of statements returned by the **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)** function. Longer statements are truncated to this length. The default is 64.

##### Return Value

A **LONGTEXT** value.

##### Example

By default, **[format\_statement()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-statement" \o "28.4.5.5 The format_statement() Function)** truncates statements to be no more than 64 characters. Setting **@sys.statement\_truncate\_len** changes the truncation length for the current session:

mysql> **SET @stmt = 'SELECT variable, value, set\_time, set\_by FROM sys\_config';**

mysql> **SELECT sys.format\_statement(@stmt);**

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

| sys.format\_statement(@stmt) |

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

| SELECT variable, value, set\_time, set\_by FROM sys\_config |

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

mysql> **SET @sys.statement\_truncate\_len = 32;**

mysql> **SELECT sys.format\_statement(@stmt);**

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

| sys.format\_statement(@stmt) |

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

| SELECT variabl ... ROM sys\_config |

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

#### 28.4.5.6 The format\_time() Function

**Note**

As of MySQL 8.0.16, **[format\_time()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-format-time" \o "28.4.5.6 The format_time() Function)** is deprecated; expect it to be removed in a future version of MySQL. Applications that use it should be migrated to use the built-in [**FORMAT\_PICO\_TIME()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_format-pico-time) function instead. See [Section 12.22, “Performance Schema Functions”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#performance-schema-functions)

Given a Performance Schema latency or wait time in picoseconds, converts it to human-readable format and returns a string consisting of a value and a units indicator. Depending on the size of the value, the units part is **ps** (picoseconds), **ns** (nanoseconds), **us** (microseconds), **ms** (milliseconds), **s** (seconds), **m** (minutes), **h** (hours), **d** (days), or **w** (weeks).

##### Parameters

* **picoseconds TEXT**: The picoseconds value to format.

##### Return Value

A **TEXT** value.

##### Example

mysql> **SELECT sys.format\_time(3501), sys.format\_time(188732396662000);**

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

| sys.format\_time(3501) | sys.format\_time(188732396662000) |

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

| 3.50 ns | 3.15 m |

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

#### 28.4.5.7 The list\_add() Function

Adds a value to a comma-separated list of values and returns the result.

This function and **[list\_drop()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-list-drop" \o "28.4.5.8 The list_drop() Function)** can be useful for manipulating the value of system variables such as **[sql\_mode](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\server-administration.html" \l "sysvar_sql_mode)** and **[optimizer\_switch](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\server-administration.html" \l "sysvar_optimizer_switch)** that take a comma-separated list of values.

##### Parameters

* **in\_list TEXT**: The list to be modified.
* **in\_add\_value TEXT**: The value to add to the list.

##### Return Value

A **TEXT** value.

##### Example

mysql> **SELECT @@sql\_mode;**

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

| @@sql\_mode |

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

| ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES |

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

mysql> **SET @@sql\_mode = sys.list\_add(@@sql\_mode, 'NO\_ENGINE\_SUBSTITUTION');**

mysql> **SELECT @@sql\_mode;**

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

| @@sql\_mode |

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

| ONLY\_FULL\_GROUP\_BY,STRICT\_TRANS\_TABLES,NO\_ENGINE\_SUBSTITUTION |

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

mysql> **SET @@sql\_mode = sys.list\_drop(@@sql\_mode, 'ONLY\_FULL\_GROUP\_BY');**

mysql> **SELECT @@sql\_mode;**

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

| @@sql\_mode |

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

| STRICT\_TRANS\_TABLES,NO\_ENGINE\_SUBSTITUTION |

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

#### 28.4.5.8 The list\_drop() Function

Removes a value from a comma-separated list of values and returns the result. For more information, see the description of **[list\_add()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-list-add" \o "28.4.5.7 The list_add() Function)**

##### Parameters

* **in\_list TEXT**: The list to be modified.
* **in\_drop\_value TEXT**: The value to drop from the list.

##### Return Value

A **TEXT** value.

#### 28.4.5.9 The ps\_is\_account\_enabled() Function

Returns **YES** or **NO** to indicate whether Performance Schema instrumentation for a given account is enabled.

##### Parameters

* **in\_host VARCHAR(60)**: The host name of the account to check.
* **in\_user VARCHAR(32)**: The user name of the account to check.

##### Return Value

An **ENUM('YES','NO')** value.

##### Example

mysql> **SELECT sys.ps\_is\_account\_enabled('localhost', 'root');**

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

| sys.ps\_is\_account\_enabled('localhost', 'root') |

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

| YES |

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

#### 28.4.5.10 The ps\_is\_consumer\_enabled() Function

Returns **YES** or **NO** to indicate whether a given Performance Schema consumer is enabled, or **NULL** if the argument is **NULL**. If the argument is not a valid consumer name, an error occurs. (Prior to MySQL 8.0.18, the function returns **NULL** if the argument is not a valid consumer name.)

This function accounts for the consumer hierarchy, so a consumer is not considered enabled unless all consumers on which depends are also enabled. For information about the consumer hierarchy, see [Section 27.4.7, “Pre-Filtering by Consumer”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-consumer-filtering).

##### Parameters

* **in\_consumer VARCHAR(64)**: The name of the consumer to check.

##### Return Value

An **ENUM('YES','NO')** value.

##### Example

mysql> **SELECT sys.ps\_is\_consumer\_enabled('thread\_instrumentation');**

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

| sys.ps\_is\_consumer\_enabled('thread\_instrumentation') |

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

| YES |

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

#### 28.4.5.11 The ps\_is\_instrument\_default\_enabled() Function

Returns **YES** or **NO** to indicate whether a given Performance Schema instrument is enabled by default.

##### Parameters

* **in\_instrument VARCHAR(128)**: The name of the instrument to check.

##### Return Value

An **ENUM('YES','NO')** value.

##### Example

mysql> **SELECT sys.ps\_is\_instrument\_default\_enabled('memory/innodb/row\_log\_buf');**

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

| sys.ps\_is\_instrument\_default\_enabled('memory/innodb/row\_log\_buf') |

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

| NO |

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

mysql> **SELECT sys.ps\_is\_instrument\_default\_enabled('statement/sql/alter\_user');**

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

| sys.ps\_is\_instrument\_default\_enabled('statement/sql/alter\_user') |

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

| YES |

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

#### 28.4.5.12 The ps\_is\_instrument\_default\_timed() Function

Returns **YES** or **NO** to indicate whether a given Performance Schema instrument is timed by default.

##### Parameters

* **in\_instrument VARCHAR(128)**: The name of the instrument to check.

##### Return Value

An **ENUM('YES','NO')** value.

##### Example

mysql> **SELECT sys.ps\_is\_instrument\_default\_timed('memory/innodb/row\_log\_buf');**

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

| sys.ps\_is\_instrument\_default\_timed('memory/innodb/row\_log\_buf') |

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

| NO |

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

mysql> **SELECT sys.ps\_is\_instrument\_default\_timed('statement/sql/alter\_user');**

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

| sys.ps\_is\_instrument\_default\_timed('statement/sql/alter\_user') |

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

| YES |

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

#### 28.4.5.13 The ps\_is\_thread\_instrumented() Function

Returns **YES** or **NO** to indicate whether Performance Schema instrumentation for a given connection ID is enabled, **UNKNOWN** if the ID is unknown, or **NULL** if the ID is **NULL**.

##### Parameters

* **in\_connection\_id BIGINT UNSIGNED**: The connection ID. This is a value of the type given in the **PROCESSLIST\_ID** column of the Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table or the **Id** column of [**SHOW PROCESSLIST**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#show-processlist) output.

##### Return Value

An **ENUM('YES','NO','UNKNOWN')** value.

##### Example

mysql> **SELECT sys.ps\_is\_thread\_instrumented(43);**

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

| sys.ps\_is\_thread\_instrumented(43) |

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

| UNKNOWN |

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

mysql> **SELECT sys.ps\_is\_thread\_instrumented(CONNECTION\_ID());**

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

| sys.ps\_is\_thread\_instrumented(CONNECTION\_ID()) |

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

| YES |

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

#### 28.4.5.14 The ps\_thread\_account() Function

Given a Performance Schema thread ID, returns the ***user\_name*@*host\_name*** account associated with the thread.

##### Parameters

* **in\_thread\_id BIGINT UNSIGNED**: The thread ID for which to return the account. The value should match the **THREAD\_ID** column from some Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table row.

##### Return Value

A **TEXT** value.

##### Example

mysql> **SELECT sys.ps\_thread\_account(sys.ps\_thread\_id(CONNECTION\_ID()));**

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

| sys.ps\_thread\_account(sys.ps\_thread\_id(CONNECTION\_ID())) |

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

| root@localhost |

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

#### 28.4.5.15 The ps\_thread\_id() Function

**Note**

As of MySQL 8.0.16, **[ps\_thread\_id()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-ps-thread-id" \o "28.4.5.15 The ps_thread_id() Function)** is deprecated; expect it to be removed in a future version of MySQL. Applications that use it should be migrated to use the built-in [**PS\_THREAD\_ID()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_ps-thread-id) and [**PS\_CURRENT\_THREAD\_ID()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#function_ps-current-thread-id) functions instead. See [Section 12.22, “Performance Schema Functions”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\functions.html#performance-schema-functions)

Returns the Performance Schema thread ID assigned to a given connection ID, or the thread ID for the current connection if the connection ID is **NULL**.

##### Parameters

* **in\_connection\_id BIGINT UNSIGNED**: The ID of the connection for which to return the thread ID. This is a value of the type given in the **PROCESSLIST\_ID** column of the Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table or the **Id** column of [**SHOW PROCESSLIST**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sql-statements.html#show-processlist) output.

##### Return Value

A **BIGINT UNSIGNED** value.

##### Example

mysql> **SELECT sys.ps\_thread\_id(260);**

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

| sys.ps\_thread\_id(260) |

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

| 285 |

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

#### 28.4.5.16 The ps\_thread\_stack() Function

Returns a JSON formatted stack of all statements, stages, and events within the Performance Schema for a given thread ID.

##### Parameters

* **in\_thread\_id BIGINT**: The ID of the thread to trace. The value should match the **THREAD\_ID** column from some Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table row.
* **in\_verbose BOOLEAN**: Whether to include **file:lineno** information in the events.

##### Return Value

A **LONGTEXT CHARACTER SET latin1** value.

##### Example

mysql> **SELECT sys.ps\_thread\_stack(37, FALSE) AS thread\_stack\G**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

thread\_stack: {"rankdir": "LR","nodesep": "0.10",

"stack\_created": "2014-02-19 13:39:03", "mysql\_version": "8.0.2-dmr-debug-log",

"mysql\_user": "root@localhost","events": [{"nesting\_event\_id": "0",

"event\_id": "10", "timer\_wait": 256.35, "event\_info": "sql/select",

"wait\_info": "select @@version\_comment limit 1\nerrors: 0\nwarnings: 0\nlock time:

...

#### 28.4.5.17 The ps\_thread\_trx\_info() Function

Returns a JSON object containing information about a given thread. The information includes the current transaction, and the statements it has already executed, derived from the Performance Schema [**events\_transactions\_current**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-events-transactions-current-table) and [**events\_statements\_history**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-events-statements-history-table) tables. (The consumers for those tables must be enabled to obtain full data in the JSON object.)

If the output exceeds the truncation length (65535 by default), a JSON error object is returned, such as:

{ "error": "Trx info truncated: Row 6 was cut by GROUP\_CONCAT()" }

Similar error objects are returned for other warnings and exceptions raised during function execution.

##### Parameters

* **in\_thread\_id BIGINT UNSIGNED**: The thread ID for which to return transaction information. The value should match the **THREAD\_ID** column from some Performance Schema [**threads**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\performance-schema.html#performance-schema-threads-table) table row.

##### Configuration Options

[**ps\_thread\_trx\_info()**](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-ps-thread-trx-info) operation can be modified using the following configuration options or their corresponding user-defined variables (see [Section 28.4.2.1, “The sys\_config Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config)):

* **ps\_thread\_trx\_info.max\_length**, **@sys.ps\_thread\_trx\_info.max\_length**

The maximum length of the output. The default is 65535.

##### Return Value

A **LONGTEXT** value.

##### Example

mysql> **SELECT sys.ps\_thread\_trx\_info(48)\G**

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* 1. row \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

sys.ps\_thread\_trx\_info(48): [

{

"time": "790.70 us",

"state": "COMMITTED",

"mode": "READ WRITE",

"autocommitted": "NO",

"gtid": "AUTOMATIC",

"isolation": "REPEATABLE READ",

"statements\_executed": [

{

"sql\_text": "INSERT INTO info VALUES (1, \'foo\')",

"time": "471.02 us",

"schema": "trx",

"rows\_examined": 0,

"rows\_affected": 1,

"rows\_sent": 0,

"tmp\_tables": 0,

"tmp\_disk\_tables": 0,

"sort\_rows": 0,

"sort\_merge\_passes": 0

},

{

"sql\_text": "COMMIT",

"time": "254.42 us",

"schema": "trx",

"rows\_examined": 0,

"rows\_affected": 0,

"rows\_sent": 0,

"tmp\_tables": 0,

"tmp\_disk\_tables": 0,

"sort\_rows": 0,

"sort\_merge\_passes": 0

}

]

},

{

"time": "426.20 us",

"state": "COMMITTED",

"mode": "READ WRITE",

"autocommitted": "NO",

"gtid": "AUTOMATIC",

"isolation": "REPEATABLE READ",

"statements\_executed": [

{

"sql\_text": "INSERT INTO info VALUES (2, \'bar\')",

"time": "107.33 us",

"schema": "trx",

"rows\_examined": 0,

"rows\_affected": 1,

"rows\_sent": 0,

"tmp\_tables": 0,

"tmp\_disk\_tables": 0,

"sort\_rows": 0,

"sort\_merge\_passes": 0

},

{

"sql\_text": "COMMIT",

"time": "213.23 us",

"schema": "trx",

"rows\_examined": 0,

"rows\_affected": 0,

"rows\_sent": 0,

"tmp\_tables": 0,

"tmp\_disk\_tables": 0,

"sort\_rows": 0,

"sort\_merge\_passes": 0

}

]

}

]

#### 28.4.5.18 The quote\_identifier() Function

Given a string argument, this function produces a quoted identifier suitable for inclusion in SQL statements. This is useful when a value to be used as an identifier is a reserved word or contains backtick (**`**) characters.

##### Parameters

**in\_identifier TEXT**: The identifier to quote.

##### Return Value

A **TEXT** value.

##### Example

mysql> **SELECT sys.quote\_identifier('plain');**

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

| sys.quote\_identifier('plain') |

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

| `plain` |

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

mysql> **SELECT sys.quote\_identifier('trick`ier');**

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

| sys.quote\_identifier('trick`ier') |

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

| `trick``ier` |

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

mysql> **SELECT sys.quote\_identifier('integer');**

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

| sys.quote\_identifier('integer') |

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

| `integer` |

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

#### 28.4.5.19 The sys\_get\_config() Function

Given a configuration option name, returns the option value from the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table, or the provided default value (which may be **NULL**) if the option does not exist in the table.

If **[sys\_get\_config()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-get-config" \o "28.4.5.19 The sys_get_config() Function)** returns the default value and that value is **NULL**, it is expected that the caller is able to handle **NULL** for the given configuration option.

By convention, routines that call **[sys\_get\_config()](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-get-config" \o "28.4.5.19 The sys_get_config() Function)** first check whether the corresponding user-defined variable exists and is non-**NULL**. If so, the routine uses the variable value without reading the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table. If the variable does not exist or is **NULL**, the routine reads the option value from the table and sets the user-defined variable to that value. For more information about the relationship between configuration options and their corresponding user-defined variables, see [Section 28.4.2.1, “The sys\_config Table”](file:///E:\backup\%E4%B8%8B%E8%BD%BD\refman-8.0-en.html-chapter\refman-8.0-en.html-chapter\sys-schema.html#sys-sys-config).

If you want to check whether the configuration option has already been set and, if not, use the return value of **sys\_get\_config()**, you can use **IFNULL(...)** (see example later). However, this should not be done inside a loop (for example, for each row in a result set) because for repeated calls where the assignment is needed only in the first iteration, using **IFNULL(...)** is expected to be significantly slower than using an **IF (...) THEN ... END IF;** block (see example later).

##### Parameters

* **in\_variable\_name VARCHAR(128)**: The name of the configuration option for which to return the value.
* **in\_default\_value VARCHAR(128)**: The default value to return if the configuration option is not found in the **sys\_config** table.

##### Return Value

A **VARCHAR(128)** value.

##### Example

Get a configuration value from the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table, falling back to 128 as the default if the option is not present in the table:

mysql> **SELECT sys.sys\_get\_config('statement\_truncate\_len', 128) AS Value;**

+-------+

| Value |

+-------+

| 64 |

+-------+

One-liner example: Check whether the option is already set; if not, assign the **IFNULL(...)** result (using the value from the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table):

mysql> **SET @sys.statement\_truncate\_len =**

**IFNULL(@sys.statement\_truncate\_len,**

**sys.sys\_get\_config('statement\_truncate\_len', 64));**

**IF (...) THEN ... END IF;** block example: Check whether the option is already set; if not, assign the value from the **[sys\_config](file:///E:\\backup\\%E4%B8%8B%E8%BD%BD\\refman-8.0-en.html-chapter\\refman-8.0-en.html-chapter\\sys-schema.html" \l "sys-sys-config" \o "28.4.2.1 The sys_config Table)** table:

IF (@sys.statement\_truncate\_len IS NULL) THEN

SET @sys.statement\_truncate\_len = sys.sys\_get\_config('statement\_truncate\_len', 64);

END IF;

#### 28.4.5.20 The version\_major() Function

This function returns the major version of the MySQL server.

##### Parameters

None.

##### Return Value

A **TINYINT UNSIGNED** value.

##### Example

mysql> **SELECT VERSION(), sys.version\_major();**

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

| VERSION() | sys.version\_major() |

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

| 8.0.13-debug | 8 |

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

#### 28.4.5.21 The version\_minor() Function

This function returns the minor version of the MySQL server.

##### Parameters

None.

##### Return Value

A **TINYINT UNSIGNED** value.

##### Example

mysql> **SELECT VERSION(), sys.version\_minor();**

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

| VERSION() | sys.version\_minor() |

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

| 8.0.13-debug | 0 |

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

#### 28.4.5.22 The version\_patch() Function

This function returns the patch release version of the MySQL server.

##### Parameters

None.

##### Return Value

A **TINYINT UNSIGNED** value.

##### Example

mysql> **SELECT VERSION(), sys.version\_patch();**

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

| VERSION() | sys.version\_patch() |

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

| 8.0.13-debug | 13 |

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