PostgreSQL Server Parameters

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7:33 PM

You can check server parameter changes using Kusto

```
//check server parameter changes
MonRdmsInstanceAgentAction
| where LogicalServerName == "server name here"
| where request_url contains "config" and http_verb !~ "get" and response contains "determine server parameter"
| project originalEventTimestamp, LogicalServerName, http_verb, request_id, status_code, request_url, response
```

New process for server parameter requests from customer

1. **PostgreSQL**: Product team have documented the PostgreSQL parameters categorized as GA live and private preview sets. It is uploaded **here**.
    1. For GA live parameters, customer can change them from portal/CLI.
    2. For queries related to parameters in private preview, CSS need to get NDA confirmation from customer (Rachel Agyemang can help) and ask engineering t ICM.
    3. The parameters not present in the above document can be called as Restricted parameters. For any customer queries related to these, request CSS to co

PostgreSQL support server parameters for user configuration. The parameters can be set at server startup using command line and modification through the command line (ex. p

Given we have now a more secure architecture for a multi-tenant hosting environment we have more flexibilities allowing users to customize server parameters. However, we wi that we will carefully review each of the parameters and understand its impact before exposing them. In general, we will not allow customers to customize OS resources such as instance. Parameters for non-supported features such as MyISAM will not be exposed. Parameters that have been deprecated in the latest versions hosted will not be allowed.

For the longer term, the consensus among the team is we should minimize the burden on customers for having to customize/manage a large set of server parameters, which cou we can provide a set of best practice based profiles optimized for particular application environments.

To view the server settings you can either view it from the Azure Portal or using the command line utility

1. View:

```
SHOW ALL;
- or -
SHOW "lc_collate";
- or -
SELECT * FROM pg_settings;
```

2. Change:

```
SET "client_min_messages" = 'ERROR';
- or -
UPDATE pg_settings SET setting = 'ERROR' WHERE name = 'client_min_messages';
```

```
postgres=> SHOW ALL;
                name                |              setting               |
------------------------------------+------------------------------------+-------------------------------------------------
 allow_redirection                  |                                    | XDBC setting.
 allow_system_table_mods            | off                                | Allows modifications of the structure of system table
 application_name                   | psql                               | Sets the application name to be reported in statistic
 archive_azure_location             | c:\BackupShareDir\Archive          | Sets the location where WAL gets archived in Azure
 archive_command                    |                                    | Sets the shell command that will be called to archive
 archive_mode                       | on                                 | Allows archiving of WAL files using archive_command.
 archive_timeout                    | 15min                              | Forces a switch to the next xlog file if a new file h
 array_nulls                        | on                                 | Enable input of NULL elements in arrays.
 authentication_timeout             | 30s                                | Sets the maximum allowed time to complete client auth
 autovacuum                         | on                                 | Starts the autovacuum subprocess.
 autovacuum_analyze_scale_factor    | 0.1                                | Number of tuple inserts, updates, or deletes prior to
 autovacuum_analyze_threshold       | 50                                 | Minimum number of tuple inserts, updates, or deletes
 autovacuum_freeze_max_age          | 200000000                          | Age at which to autovacuum a table to prevent transac
 autovacuum_max_workers             | 3                                  | Sets the maximum number of simultaneously running aut
 autovacuum_multixact_freeze_max_age | 400000000                          | Multixact age at which to autovacuum a table to preve
 autovacuum_naptime                 | 1min                               | Time to sleep between autovacuum runs.
 autovacuum_vacuum_cost_delay       | 20ms                               | Vacuum cost delay in milliseconds, for autovacuum.
 autovacuum_vacuum_cost_limit       | -1                                 | Vacuum cost amount available before napping, for auto
 autovacuum_vacuum_scale_factor     | 0.2                                | Number of tuple updates or deletes prior to vacuum as
```

Parameter	Meaning
array_nulls	Enable input of NULL elements in arrays.
backslash_quote	Sets whether "\'" is allowed in string literals.
bytea_output	Sets the output format for bytea.
check_function_bodies	Check function bodies during CREATE FUNCTION.
client_encoding	Sets the client's character set encoding.
client_min_messages	Sets the message levels that are sent to the client.
connection_throttling	Enables temporary connection throttling per IP for too many invalid password login failures.
constraint_exclusion	Enables the planner to use constraints to optimize queries.
cpu_index_tuple_cost	Sets the planner's estimate of the cost of processing each index entry during an index scan.
cpu_operator_cost	Sets the planner's estimate of the cost of processing each operator or function call.
cpu_tuple_cost	Sets the planner's estimate of the cost of processing each tuple (row).
cursor_tuple_fraction	Sets the planner's estimate of the fraction of a cursor's rows that will be retrieved.
datestyle	Sets the display format for date and time values.
deadlock_timeout	Sets the amount of time, in milliseconds, to wait on a lock before checking for deadlock.
debug_print_plan	Logs each query's execution plan.
debug_print_rewritten	Logs each query's rewritten parse tree.
default_statistics_target	Sets the default statistics target.
default_text_search_config	Sets default text search configuration.
default_transaction_deferrable	Sets the default deferrable status of new transactions.
default_transaction_isolation	Sets the transaction isolation level of each new transaction.
default_transaction_read_only	Sets the default read-only status of new transactions.
default_with_oids	Create new tables with OIDs by default.
enable_bitmapscan	Enables the planner's use of bitmap-scan plans.
enable_hashagg	Enables the planner's use of hashed aggregation plans.
enable_hashjoin	Enables the planner's use of hash join plans.
enable_indexonlyscan	Enables the planner's use of index-only-scan plans.
enable_indexscan	Enables the planner's use of index-scan plans.
enable_material	Enables the planner's use of materialization.
enable_mergejoin	Enables the planner's use of merge join plans.
enable_nestloop	Enables the planner's use of nested-loop join plans.
enable_seqscan	Enables the planner's use of sequential-scan plans.
enable_sort	Enables the planner's use of explicit sort steps.
enable_tidscan	Enables the planner's use of TID scan plans.
escape_string_warning	Warn about backslash escapes in ordinary string literals.
exit_on_error	Terminate session on any error.
extra_float_digits	Sets the number of digits displayed for floating-point values.
force_parallel_mode	Forces use of parallel query facilities.
from_collapse_limit	Sets the FROM-list size beyond which subqueries are not collapsed.
geqo	Enables genetic query optimization.

geqo_effort	GEQO: effort is used to set the default for other GEQO parameters.
geqo_generations	GEQO: number of iterations of the algorithm.
geqo_pool_size	GEQO: number of individuals in the population.
geqo_seed	GEQO: seed for random path selection.
geqo_selection_bias	GEQO: selective pressure within the population.
geqo_threshold	Sets the threshold of FROM items beyond which GEQO is used.
gin_fuzzy_search_limit	Sets the maximum allowed result for exact search by GIN.
hot_standby_feedback	Allows feedback from a hot standby to the primary that will avoid query conflicts.
idle_in_transaction_session_timeout	Sets the maximum allowed duration of any idling transaction.
intervalstyle	Sets the display format for interval values.
join_collapse_limit	Sets the FROM-list size beyond which JOIN constructs are not flattened.
lock_timeout	Sets the maximum allowed duration (in milliseconds) of any wait for a lock. 0 turns this off.
log_checkpoints	Logs each checkpoint.
log_connections	Logs each successful connection.
log_disconnections	Logs end of a session, including duration.
log_duration	Logs the duration of each completed SQL statement.
log_error_verbosity	Sets the verbosity of logged messages.
log_lock_waits	Logs long lock waits.
log_min_duration_statement	Sets the minimum execution time (in milliseconds) above which statements will be logged. -1 disables logging statement durations.
log_min_error_statement	Causes all statements generating error at or above this level to be logged.
log_min_messages	Sets the message levels that are logged.
log_retention_days	Sets how many days a log file is saved for.
log_statement	Sets the type of statements logged.
log_statement_stats	For each query, writes cumulative performance statistics to the server log.
max_parallel_workers_per_gather	Sets the maximum number of parallel processes per executor node.
max_prepared_transactions	Sets the maximum number of simultaneously prepared transactions. Any change requires restarting the server to take effect. When running a replica server, you must set this parameter to the same or higher value than on the master server.
max_standby_archive_delay	Sets the maximum delay before canceling queries when a hot standby server is processing archived WAL data.
max_standby_streaming_delay	Sets the maximum delay before canceling queries when a hot standby server is processing streamed WAL data.
min_parallel_relation_size	Sets the minimum size of relations to be considered for parallel scan.
parallel_setup_cost	Sets the planner's estimate of the cost of starting up worker processes for parallel query.
parallel_tuple_cost	Sets the planner's estimate of the cost of passing each tuple (row) from worker to master backend.
pg_qs.max_query_text_length	Sets the maximum query text length that will be saved; longer queries will be truncated.
pg_qs.query_capture_mode	Selects which statements are tracked by pg_qs.
pg_qs.replace_parameter_placeholders	Selects whether parameter placeholders are replaced in parameterized queries.
pg_qs.retention_period_in_days	Sets the retention period window in days for pg_qs - after this time data will be deleted.
pg_qs.track_utility	Selects whether utility commands are tracked by pg_qs.
pg_stat_statements.track	Controls which statements are counted by pg_stat_statements.
pgms_wait_sampling.history_period	Set the frequency, in milliseconds, at which wait events are sampled.
pgms_wait_sampling.query_capture_mode	Selects which statements are tracked by the pgms_wait_sampling extension.
postgis.gdal_enabled_drivers	Controls postgis GDAL enabled driver settings.
quote_all_identifiers	When generating SQL fragments, quote all identifiers.
random_page_cost	Sets the planner's estimate of the cost of a nonsequentially fetched disk page.
search_path	Sets the schema search order for names that are not schema-qualified.
seq_page_cost	Sets the planner's estimate of the cost of a sequentially fetched disk page.
shared_preload_libraries	Sets which shared libraries are preloaded at server start. Any change requires a restart to take effect.
sql_inheritance	Causes subtables to be included by default in various commands.
statement_timeout	Sets the maximum allowed duration (in milliseconds) of any statement. 0 turns this off.
synchronize_seqscans	Enable synchronized sequential scans.
synchronous_commit	Sets the current transaction's synchronization level.

temp_buffers	Sets the maximum number of temporary buffers used by each database session.
timezone	Sets the time zone for displaying and interpreting time stamps
transform_null_equals	Treats "expr=NULL" as "expr IS NULL".
vacuum_defer_cleanup_age	Number of transactions by which VACUUM and HOT cleanup should be deferred, if any.
work_mem	Sets the amount of memory to be used by internal sort operations and hash tables before writing to temporary disk files.
xmlbinary	Sets how binary values are to be encoded in XML.
xmloption	Sets whether XML data in implicit parsing and serialization operations is to be considered as documents or content fragments.

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