

PostgreSQL Database Engineer/Administrator Interview Questions/ Answers: Full Package

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PostgreSQL Database Architecture

Question: What is difference between schema and user?

Answer:

Schema is a logical collection of objects. A user can own multiple schemas and a user with login privs can connect to database. By default user can not access objects in schema they don't own. User must have USAGE privs to access objects in schema's they don't own.

Question: What do you mean by system columns?

Answer:

Every table in PostgreSQL has few columns defined by system by-default.

Example: tableoid, xmin, xmax, cmin, cmax, ctid.

Question: What is ctid column and how it can be used?

Answer:

ctid column store physical address of each row. This column can be used to find and remove duplicate rows as even if data in duplicate rows is same but each row will have distinct ctid.

Question: What is the difference between Expression Index and partial Index?

Answer:

Expression indexes store result of an expression used for creating the index while Partial index are created on subset of data in underlying table.

Example:

Expression Index:

```
CREATE INDEX test1_lower_col1_idx ON test1 (lower (col1));
```

Partial Index:

```
CREATE INDEX test1_lower_col1_idx ON test1 (ID)
```

```
where (ID >100);
```

Question: What is default wal block size for PostgreSQL?

Answer:

8 kilobytes

Question: Can you change default wal block size for PostgreSQL?

Answer:

Yes, you can change default wal block size if you are installing from source code. Corresponding parameter is

```
--with-wal-blocksize=BLOCKSIZE
```

Question: User are getting error "Operational Error: FATAL: sorry, too many clients already". How will you resolve it?

Answer:

You will need to increase max_connections parameter.

Question: what is shared_buffers?

Answer:

The PostgreSQL buffer is named shared_buffers and it defines how much dedicated system memory PostgreSQL will use for cache. It is advised to limit shared_buffers max value to 40% of RAM.

Question: what is temp_buffers?

Answer:

temp_buffers sets the maximum amount of memory used for temporary buffers within EACH DATABASE SESSION.

Question: How to start PostgreSQL database cluster?

Answer:

```
pg_ctl start -D $PGDATA -l logfile
```

Where PGDATA is data directory for PostgreSQL database cluster.

Question: What are important parameters to configure UNIX OS memory for PostgreSQL database cluster?

Answer:

Unix OS level memory parameters should be configured to run PostgreSQL database properly.

- SHMMAX Maximum size of shared memory segment (bytes)
- SHMMIN Minimum size of shared memory segment (bytes)
- SHMALL Total amount of shared memory available (bytes or pages)
- SHMSEG Maximum number of shared memory segments per process
- SHMMNI Maximum number of shared memory segments system-wide
- SEMMNS Maximum number of semaphores system-wide
- SEMMSL Maximum number of semaphores per set

Question: What is the Linux file name to configure OS memory parameters for PostgreSQL?

Answer:

/etc/sysctl.conf

Question: How to stop PostgreSQL database cluster?

Answer:

```
pg_ctl stop [-D datadir] [-m s[mart] | f[ast] | i[mmediate] ]
```

maintenance_work_mem should be used instead.

Question: Users are getting "Too many Open files" error. How will you fix it?

Answer:

We should check max_files_per_process and try to reduce it.

Question: Please explain vacuum_cost_limit and vacuum_cost_delay?

Answer:

During the execution of VACUUM and ANALYZE commands, the system maintains an internal counter that keeps track of the estimated cost of the various I/O operations that are performed. When the accumulated cost reaches the limit as by vacuum_cost_limit, the process performing the operation will sleep for a short period of time, as specified by vacuum_cost_delay. Then it will reset the counter and continue execution.

Question: Which process writes dirty buffers to disk?

Answer: