

# Major Features: Postgres 14

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POSTGRESQL is an open-source, full-featured relational database. This presentation gives an overview of the Postgres 14 release.

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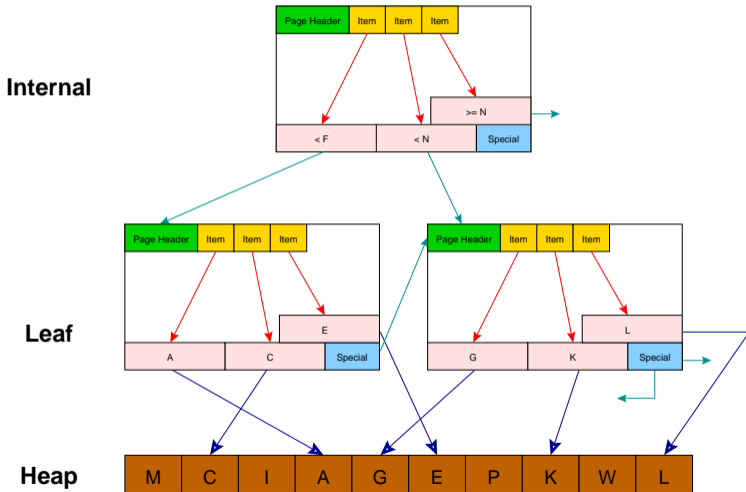
*Last updated: November 2021*

# Postgres 14 Feature Outline

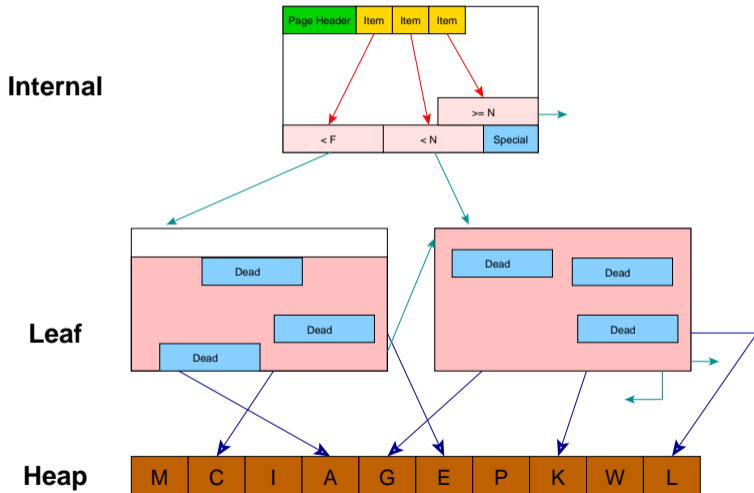
1. Reduce btree index bloat
2. BRIN improvements
3. Improved snapshot scaling
4. Global query id computation
5. Add `idle_session_timeout`
6. Add read-only and write-only predefined roles
7. Optimizer
8. Parallel foreign table scans

Full item list at <https://www.postgresql.org/docs/14/index.html>

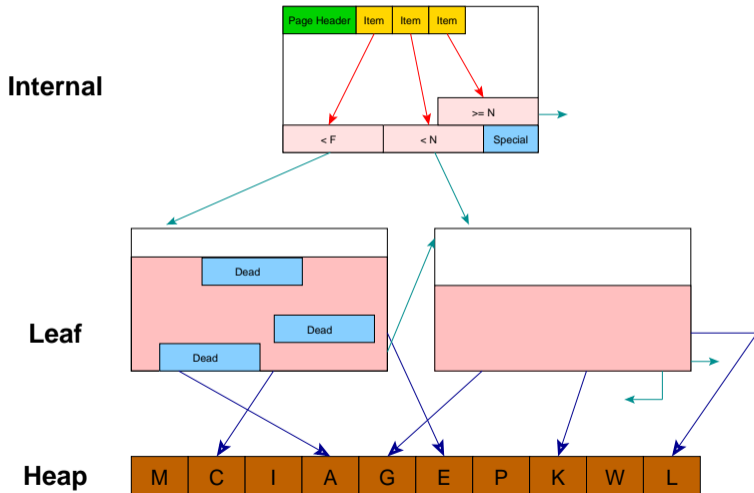
# 1. Reduce Btree Index Bloat



# Reduce Btree Index Bloat



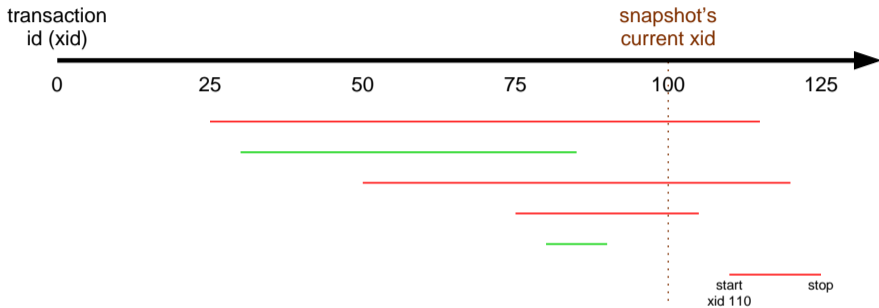
# Reduce Btree Index Bloat



## 2. BRIN Improvements

- Allow multiple min/max ranges in BRIN indexes, e.g., 1-10, 30-40
- Allow bloom filters to represent distinct values in BRIN ranges

### 3. Improve Snapshot Scaling



Green is visible. Red is invisible.

Faster snapshot generation improves performance for clusters with many idle connections.

## 4. Global Query Id Computation

The query id used to be only by *pg\_stat\_statements*:

```
ALTER SYSTEM SET compute_query_id = 'on';
ALTER SYSTEM SET log_line_prefix = '%m [%p] %Q ';
ALTER SYSTEM SET log_min_duration_statement = 0;
SELECT pg_reload_conf();
pg_reload_conf
```

```
-----
t
```

```
SELECT query, query_id FROM pg_stat_activity WHERE pg_backend_pid() = pid;
           query                |          query_id
```

```
-----+-----
SELECT query, query_id FROM ... | -8909473167852464370
```

```
\! tail -1 /u/pg/server.log
```

```
2021-07-08 21:42:05.007 EDT [31560] -8909473167852464370 LOG: duration: 1.195 ms statement: SELECT ...
```



## 5. Add `idle_session_timeout`

Terminate idle sessions after a timeout:

```
SET idle_session_timeout = '1s';  
-- wait for two seconds  
SELECT 1;  
FATAL: terminating connection due to idle-session timeout  
server closed the connection unexpectedly  
        This probably means the server terminated abnormally  
        before or while processing the request.  
The connection to the server was lost. Attempting reset: Succeeded.
```

## 6. Add Read-Only and Write-Only Predefined Roles

```
CREATE USER user1;  
CREATE USER user2 IN GROUP pg_read_all_data;  
CREATE TABLE test AS SELECT 100;
```

```
\c test user1  
SELECT * FROM test;  
ERROR: permission denied for table test
```

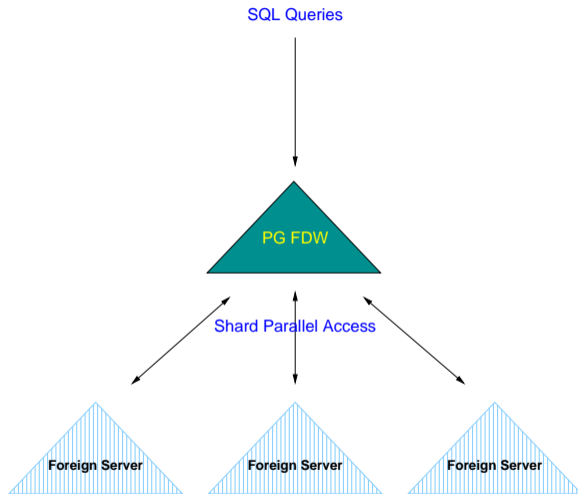
```
\c test user2  
SELECT * FROM test;  
?column?
```

```
-----  
100
```

## 7. Optimizer

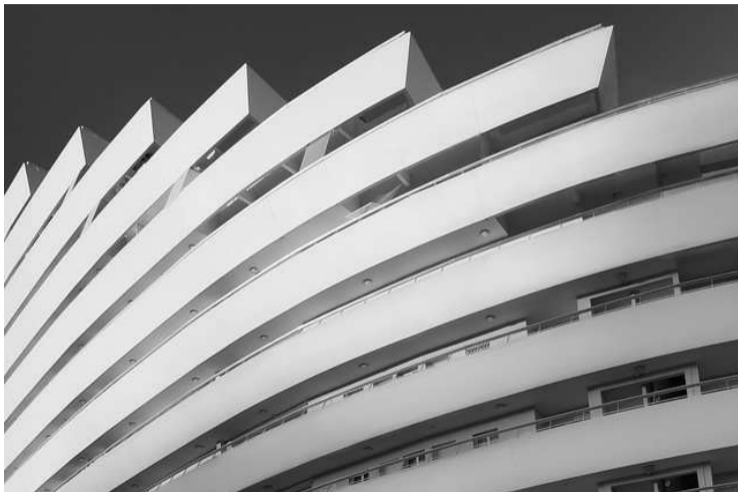
- Allow hash lookup of IN clause with many constants
- Increase the number of places extended statistics can be used for OR clause estimation
- Allow extended statistics on expressions

## 8. Parallel Foreign Table Scans



<https://momjian.us/main/presentations/performance.html#sharding>

# Conclusion



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