BAREOS 23

THE postgresql PLUGIN
AGENDA

• What is it?
• Why a new plugin?
• Advantages over the old postgres plugin
• How it works
• How to migrate
WHAT IS THE POSTGRESQL PLUGIN?

- Makes consistent PostgreSQL backups
- Does NOT do a Database Dump
- Interacts with PostgreSQL
- PostgreSQL stores consistent status to filesystem
- Backs up database files from filesystem
WHY A NEW PLUGIN?

- API used in old plugin was removed in PG 15
- Bareos 23 drops Python 2 support
- Legacy code with some drawbacks needed modernization
- Lack of tablespace support
OVERVIEW

• Use recommended non-exclusive backup API
• Supports Postgresql 10 to 16
• Supports table spaces
• Requires Python >= 3.6 and pg8000 >= 1.16
• Consists of only one source file
• Plugin Name is postgresql(old: postgres)
• Verifies Postgresql major number between backups
## COMPARISON

<table>
<thead>
<tr>
<th>Name</th>
<th>postgres</th>
<th>postgresql</th>
</tr>
</thead>
<tbody>
<tr>
<td>Postgres Vers.</td>
<td>9-14</td>
<td>10-16+</td>
</tr>
<tr>
<td>Python Vers.</td>
<td>2 and 3</td>
<td>3 only</td>
</tr>
<tr>
<td>backup mode</td>
<td>exclusive</td>
<td>none-exclusive</td>
</tr>
<tr>
<td>tablespaces</td>
<td>not supported</td>
<td>supported</td>
</tr>
</tbody>
</table>
FULL BACKUP PROCEDURE

Backup starts

- `pg_backup_start()`
  - `pg_backup_start()` returns (Log Sequence Number, LSN)
  - prepare database for online backup
  - sync db files

Online Backup Mode

- Backup database files from disk
- `pg_backup_stop()`
  - `pg_backup_stop()` returns (LSN, label file, tablesmap file)
  - switch wal file
- Write *write-ahead-logfiles* until `pg_backup_stop()`

Backup newly created WAL files
- Add required files for restore as virtual files

Backup completed
INCREMENTAL/DIFFERENTIAL BACKUP PROCEDURE

backup starts

receive and verify postgresql major version, last_backup_stop_time and last_lsn from previous backup.
If inconsistency is detected, exit backup procedure with error.

call pg_switch_wal() to force the creation of a new wal file

write WAL file

backup WAL files created since previous backup

store postgresql major version, last_backup_stop_time and last_lsn

backup completed
SEE IT IN ACTION

- Sourcecode contains test for the plugin
- systemtests/tests/py3plug-fd-postgresql/
- Backup, restore and verification
- Very handy to check how things work
SWITCH TO THE NEW PLUGIN (1)

- both in `bareos-fd-plugin-postgresql`
- Old is `postgres`, new is `postgresql`
- Old plugin emits warning message during backup
- Old plugin will be removed in Bareos 24
- Users need to switch to new plugin
SWITCH TO THE NEW PLUGIN (2)

- Adapt the configuration to use new plugin
- Review the configuration of the new plugin
- Make sure full and incremental backups work
- Verify the restore works
- Both plugins can be used in parallel during migration
THANK YOU VERY MUCH!

- Documentation: docs.bareos.org
- Mailinglist: bareos-users@googlegroups.com
- Sourcecode: github.com/bareos/bareos
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