

# Extended TOAST Pointer

#pluggable\_toast #custom\_pointer #wide\_toast\_pointer

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Vanilla TOAST Pointer:

- One TOAST table for all table attributes
- Implicit data amount limit by 32-bit TOAST value\_id - total 4 294 967 296 value ids in TOAST table limits
- Exceeding TOAST rows limit results in database stall

Extended TOAST Pointer:

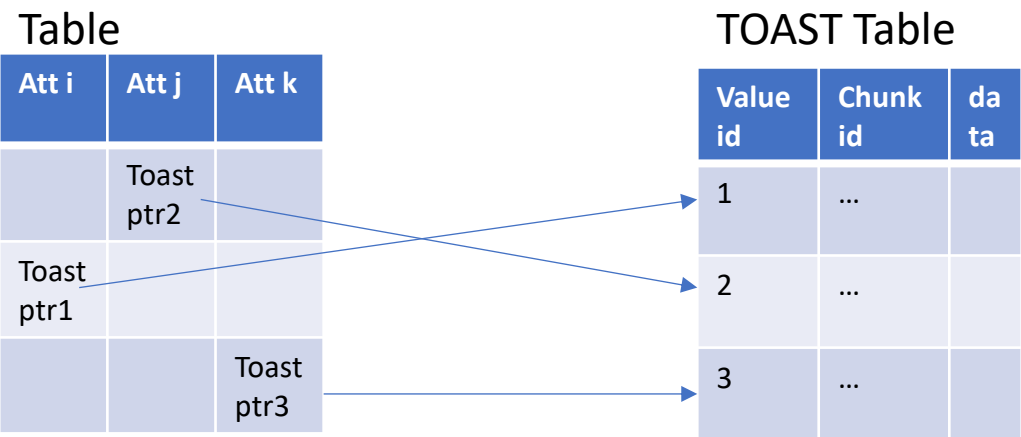
- Wide TOAST pointer with 64-bit TOAST value\_id
- Multiple TOAST tables for relation, up to imitation of columnar storage with Heap engine
- Multiple TOAST implementations – different TOAST algorithms for columns and data types

TOAST Pointer

va_header	1 byte
va_tag	1 byte
va_rawsize	4 bytes
va_extinfo	4 bytes
va_valueid	4 bytes
va_toastrelid	4 bytes

Wide TOAST Pointer

va_header	1 byte
va_tag	1 byte
va_rawsize	4 bytes
va_extinfo	4 bytes
va_valueid	8 bytes
va_toastrelid	4 bytes



Custom TOAST Pointer

va_header	1 byte
va_tag	1 byte
va_rawsize	4 bytes
va_tptrdatalen	4 bytes
va_tptrdata	X bytes

- Can store any data
- Use multiple TOAST tables
- Use external storage
- Almost unlimited possibilities!

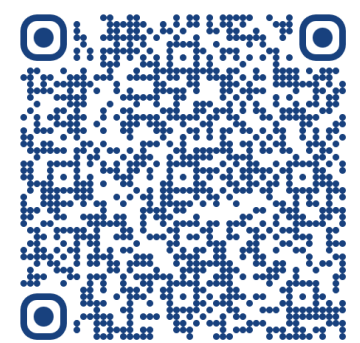
Discussions:



Extending the TOAST Pointer



64-bit TOAST Value Id



Pluggable TOAST

Collaboration wanted!

1. Overall design review needed
2. Logical replication engine revision required
3. Further TOAST improvements to be suggested

Talks:

