# bigbrotr_data_overview

July 3, 2025

# 1 Bigbrotr Database Data Overview

## 1.1 Database Schema

'Events'

| column_name | data_type |
|:------------|:----------|
| id          | character |
| pubkey      | character |
| created_at  | bigint    |
| kind        | integer   |
| tags        | jsonb     |
| content     | text      |
| sig         | character |

'Events_relays'

| column_name | data_type |
|:------------|:----------|
| event_id    | character |
| relay_url   | text      |
| seen_at     | bigint    |

'Relay_metadata'

| column_name        | data_type |
|:-------------------|:----------|
| relay_url          | text      |
| generated_at       | bigint    |
| connection_success | boolean   |
| nip11_success      | boolean   |
| openable           | boolean   |
| readable           | boolean   |
| writable           | boolean   |
| rtt_open           | integer   |
| rtt_read           | integer   |

```
| rtt_write        | integer    |
| name             | text       |
| description      | text       |
| banner           | text       |
| icon             | text       |
| pubkey           | text       |
| contact          | text       |
| supported_nips   | jsonb      |
| software         | text       |
| version          | text       |
| privacy_policy   | text       |
| terms_of_service | text       |
| limitation       | jsonb      |
| extra_fields     | jsonb      |
```

'Relays'

| column_name | data_type |
|:------------|:----------|
| url         | text      |
| network     | text      |
| inserted_at | bigint    |

## 1.2 Row Counts per Table

```
            table   row_count
0    events_relays   11360328
1           events    6385152
2           relays       8865
3   relay_metadata        775
```

  Analisi dello spazio per tabella:

  TABELLA: events
Numero righe: 6403135
```
Colonna              Avg (bytes)   Totale (GB)
id                         65.00          0.39
pubkey                     65.00          0.39
created_at                  8.00          0.05
kind                        4.00          0.02
tags                      374.35          2.23
content                   151.66          0.90
sig                       132.00          0.79
```
Totale dati stimati: 4.77 GB

```
   Indici:
Indice                          Size (GB)
events_pkey                          0.74
idx_events_pubkey                    0.19
idx_events_created_at                0.16
idx_events_kind                      0.06
idx_events_kind_created_at           0.24
Totale indici: 1.41 GB
Totale complessivo stimato: 6.18 GB


  TABELLA: relays
Numero righe: 8865
Colonna              Avg (bytes)  Totale (GB)
url                       30.61          0.00
network                    8.48          0.00
inserted_at                8.00          0.00
Totale dati stimati: 0.00 GB

  Indici:
Indice                          Size (GB)
relays_pkey                          0.00
Totale indici: 0.00 GB
Totale complessivo stimato: 0.00 GB


  TABELLA: events_relays
Numero righe: 11369482
Colonna              Avg (bytes)  Totale (GB)
event_id                  65.00          0.69
relay_url                 24.40          0.26
seen_at                    8.00          0.08
Totale dati stimati: 1.03 GB

  Indici:
Indice                          Size (GB)
events_relays_pkey                   1.65
idx_events_relays_event_id           0.82
idx_events_relays_relay_url          0.07
idx_events_relays_seen_at            0.10
Totale indici: 2.65 GB
Totale complessivo stimato: 3.68 GB


  TABELLA: relay_metadata
Numero righe: 775
Colonna              Avg (bytes)  Totale (GB)
relay_url                 28.68          0.00
```

```
generated_at                     8.00            0.00
connection_success               1.00            0.00
nip11_success                    1.00            0.00
openable                         1.00            0.00
readable                         1.00            0.00
writable                         1.00            0.00
rtt_open                         4.00            0.00
rtt_read                         4.00            0.00
rtt_write                        4.00            0.00
name                            18.22            0.00
description                     50.57            0.00
banner                           1.00            0.00
icon                            54.49            0.00
pubkey                          60.84            0.00
contact                         23.29            0.00
supported_nips                   9.00            0.00
software                        40.79            0.00
version                          7.72            0.00
privacy_policy                  31.00            0.00
terms_of_service                25.00            0.00
limitation                     146.40            0.00
extra_fields                    57.69            0.00
Totale dati stimati: 0.00 GB

  Indici:
Indice                         Size (GB)
relay_metadata_pkey                 0.00
idx_relay_metadata_relay_url        0.00
idx_relay_metadata_generated_at      0.00
idx_relay_metadata_connection_success       0.00
idx_relay_metadata_nip11_success        0.00
Totale indici: 0.00 GB
Totale complessivo stimato: 0.00 GB
```
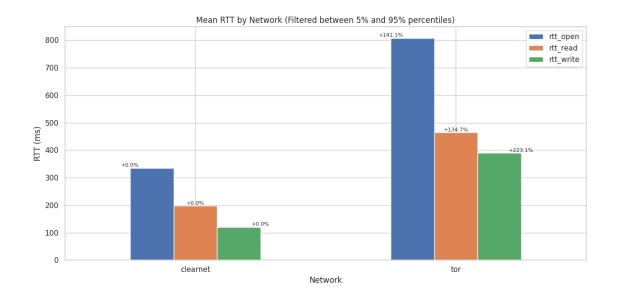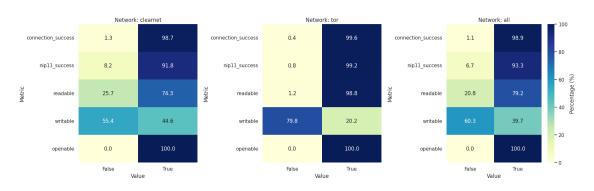
## 1.3 Relays Overview

```
Total relays: 8865, with metadata: 1238 (13.97%)
Network distribution for relays with metadata:
- clearnet: 990 (79.97%)
- tor: 248 (20.03%)
```

Mean RTT by Network (Filtered between 5% and 95% percentiles)



Percentage of Relays per Metric

```
Network: clearnet
connection_success  nip11_success  readable  writable  openable
True                True           True      True      True      420
                                             False     True      276
                                   False     False     True      197
                    False          False     False     True       49
                                   True      False     True       19
                                             True      True       11
                    True           False     True      True        3
                    False          False     True      True        2
Name: count, dtype: int64

Network: tor
connection_success  nip11_success  readable  writable  openable
```

| connection_success | nip11_success | readable | writable | openable | count |
|---|---|---|---|---|---|
| True | True | True | False | True | 192 |
| | | | True | True | 50 |
| | | False | False | True | 3 |
| | False | True | False | True | 2 |

Name: count, dtype: int64

Network: all

| connection_success | nip11_success | readable | writable | openable | count |
|---|---|---|---|---|---|
| True | True | True | True | True | 470 |
| | | | False | True | 468 |
| | | False | False | True | 200 |
| | False | False | False | True | 49 |
| | | True | False | True | 21 |
| | | | True | True | 11 |
| | True | False | True | True | 3 |
| | False | False | True | True | 2 |

Name: count, dtype: int64

Relay Status Combinations



Network: clearnet
- Openable only: 246 (25.2%)
- Openable & Readable: 295 (30.2%)
- Openable & Writable: 5 (0.5%)
- Openable & Readable & Writable: 431 (44.1%)

Network: tor
- Openable only: 3 (1.2%)
- Openable & Readable: 194 (78.5%)
- Openable & Readable & Writable: 50 (20.2%)

Network: all
- Openable only: 249 (20.3%)
- Openable & Readable: 489 (40.0%)
- Openable & Writable: 5 (0.4%)
- Openable & Readable & Writable: 481 (39.3%)

## Percentage of Relays per NIP-11 Column and Network (Sorted by Clearnet-Tor Gap)

| NIP-11 Column | clearnet | tor | all |
|---|---|---|---|
| description | 88.4 | 20.6 | 74.8 |
| pubkey | 73.7 | 9.7 | 60.9 |
| contact | 62.8 | 8.1 | 51.9 |
| icon | 41.1 | 5.2 | 33.9 |
| extra_fields | 56.6 | 85.9 | 62.4 |
| limitation | 63.1 | 84.7 | 67.4 |
| software | 91.3 | 99.6 | 93.0 |
| name | 91.4 | 99.6 | 93.1 |
| version | 91.1 | 99.2 | 92.7 |
| banner | 5.6 | 0.0 | 4.4 |
| supported_nips | 0.1 | 0.4 | 0.2 |
| terms_of_service | 0.7 | 0.8 | 0.7 |
| privacy_policy | 0.4 | 0.4 | 0.4 |

## Percentage of Relays per Limitation Type and Network (Ordered by Clearnet-Tor Gap)

| Limitation Type | clearnet | tor | all |
|---|---|---|---|
| restricted_writes | 30.5 | 79.0 | 40.2 |
| payment_required | 45.2 | 83.5 | 52.8 |
| max_limit | 31.8 | 2.0 | 25.8 |
| max_message_length | 32.0 | 2.4 | 26.1 |
| max_subscriptions | 31.5 | 2.4 | 25.7 |
| auth_required | 18.7 | 1.2 | 15.2 |
| max_event_tags | 15.1 | 1.2 | 12.3 |
| max_filters | 14.1 | 0.4 | 11.4 |
| min_pow_difficulty | 13.6 | 0.8 | 11.1 |
| max_content_length | 12.8 | 0.4 | 10.3 |
| max_subid_length | 10.4 | 0.8 | 8.5 |
| min_prefix | 8.8 | 0.4 | 7.1 |
| created_at_lower_limit | 6.6 | 0.4 | 5.3 |
| created_at_upper_limit | 6.6 | 0.4 | 5.3 |
| max_event_time_older_than_now | 1.1 | 0.0 | 0.9 |
| max_event_time_newer_than_now | 1.1 | 0.0 | 0.9 |
| max_subscription | 0.6 | 0.0 | 0.5 |
| max_file_size | 0.1 | 0.0 | 0.1 |
| default_limit | 0.1 | 0.0 | 0.1 |

## Percentage of Relays per Extra Field and Network (Ordered by Clearnet-Tor Gap)

| Extra Field | clearnet | tor | all |
|---|---|---|---|
| id | 26.7 | 83.9 | 38.1 |
| negentropy | 14.2 | 0.8 | 11.6 |
| fees | 10.5 | 1.2 | 8.6 |
| payments_url | 10.1 | 1.2 | 8.3 |
| supported_nip_extensions | 7.5 | 0.4 | 6.1 |
| posting_policy | 4.6 | 0.0 | 3.7 |
| retention | 1.8 | 0.0 | 1.5 |
| services | 1.0 | 0.0 | 0.8 |
| config | 0.6 | 0.0 | 0.5 |
| canonical_url | 0.9 | 0.4 | 0.8 |
| icon_url | 0.3 | 0.0 | 0.2 |
| tags | 0.3 | 0.0 | 0.2 |
| language_tags | 0.6 | 0.4 | 0.6 |
| git_commit_sha | 0.2 | 0.0 | 0.2 |
| payment_url | 0.2 | 0.0 | 0.2 |
| nip50 | 0.1 | 0.0 | 0.1 |
| pub_key | 0.1 | 0.0 | 0.1 |
| relay_countries | 0.4 | 0.4 | 0.4 |

## Correlation Matrices of Relay Properties by Network

### clearnet

| | writable | readable | restricted_writes | payment_required |
|---|---|---|---|---|
| writable | 1.00 | 0.50 | -0.31 | -0.23 |
| readable | 0.50 | 1.00 | -0.02 | 0.05 |
| restricted_writes | -0.31 | -0.02 | 1.00 | 0.06 |
| payment_required | -0.23 | 0.05 | 0.06 | 1.00 |

### tor

| | writable | readable | restricted_writes | payment_required |
|---|---|---|---|---|
| writable | 1.00 | 0.06 | -0.83 | -0.06 |
| readable | 0.06 | 1.00 | 0.10 | -0.66 |
| restricted_writes | -0.83 | 0.10 | 1.00 | -0.10 |
| payment_required | -0.06 | -0.66 | -0.10 | 1.00 |

### all

| | writable | readable | restricted_writes | payment_required |
|---|---|---|---|---|
| writable | 1.00 | 0.39 | -0.45 | -0.19 |
| readable | 0.39 | 1.00 | 0.14 | 0.00 |
| restricted_writes | -0.45 | 0.14 | 1.00 | -0.02 |
| payment_required | -0.19 | 0.00 | -0.02 | 1.00 |