NSF/IUCRC CAC PROJECT

INTEGRATED VISUALIZING, MONITORING, AND MANAGING HPC SYSTEMS

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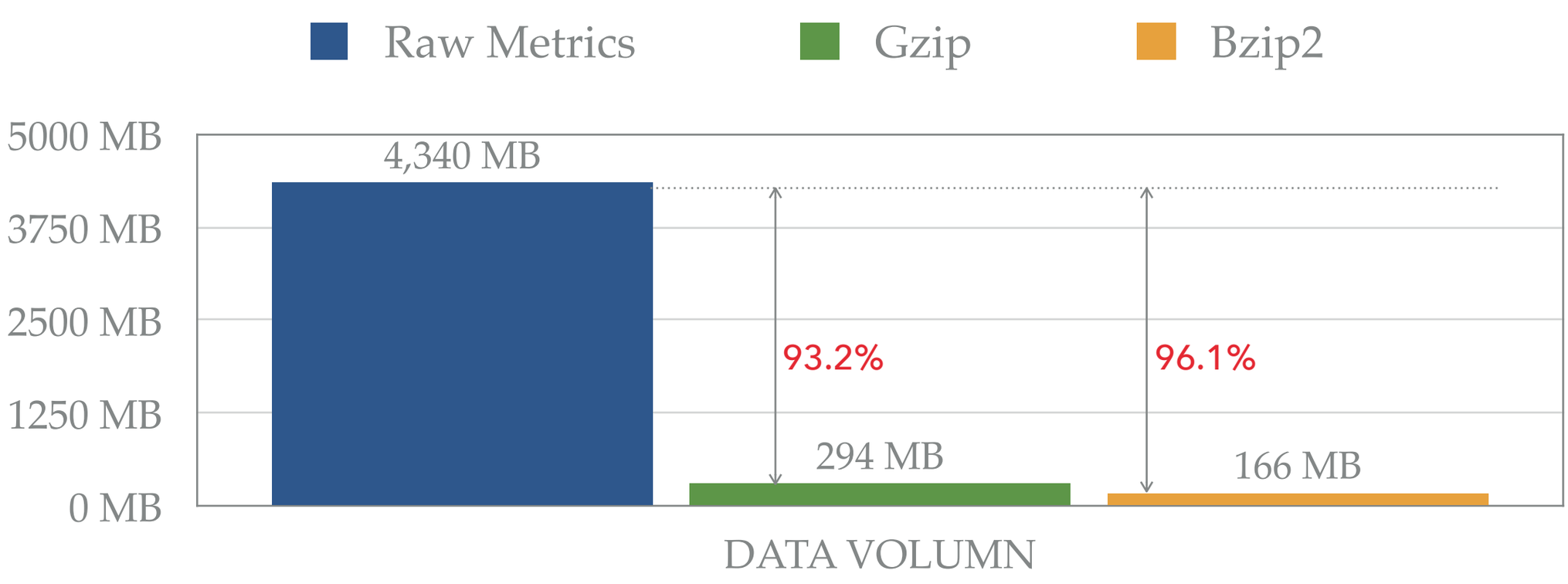
LAST MEETING

- Explored compressed monitoring metrics in zipped files
  - Compressing CSV file achieved a better performance:
    - Compression rate is about 96.1% using Bzip2



1 day of iDRAC9 monitoring data on the RedRaider Cluster

TIMESCALE DB COMPRESSION

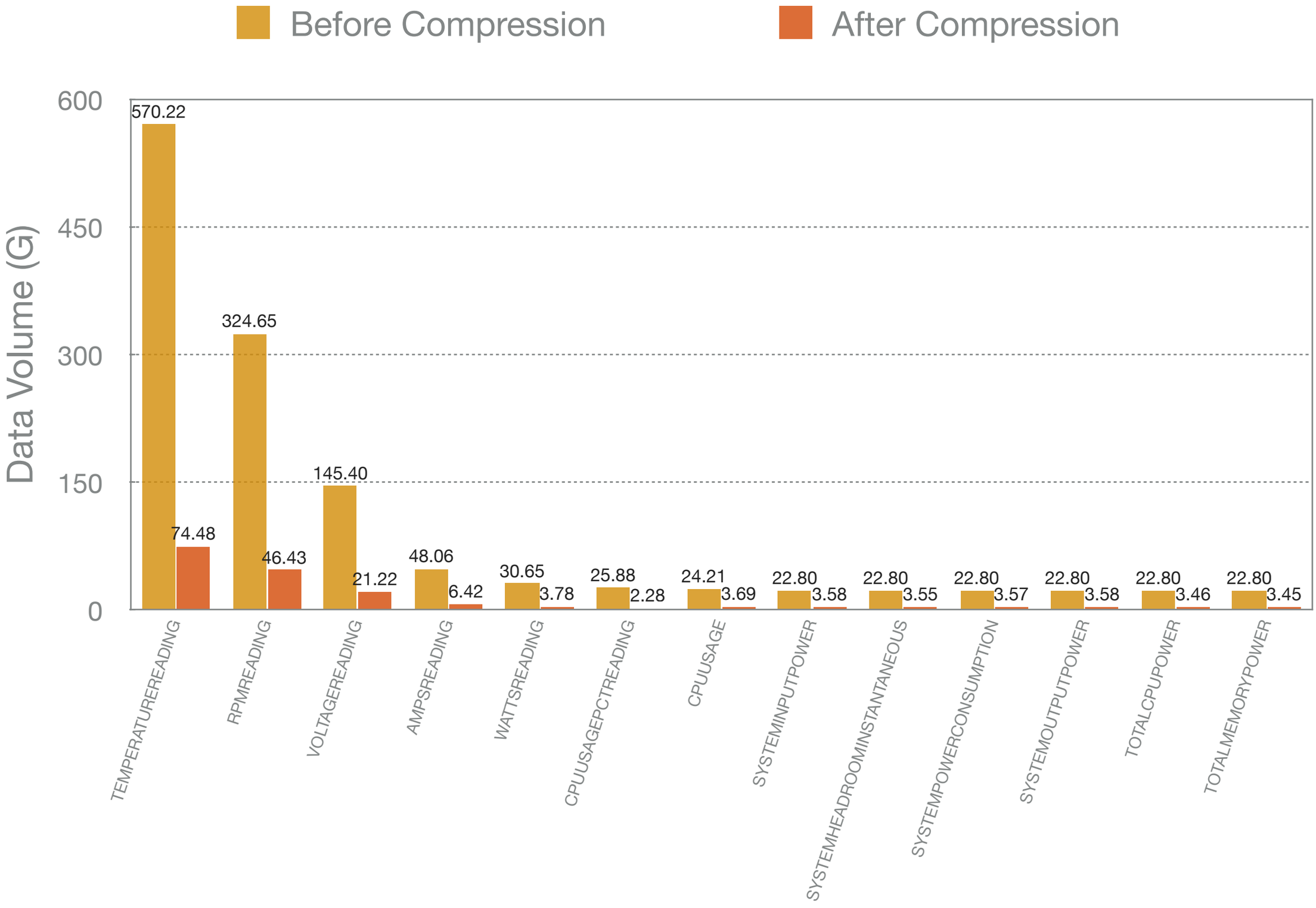
- Upgrade TimescaleDB from version 1.74 to version 2.3.
- Explore TimescaleDB built-in compression mechanism.
- Use the following commands to enable the compression on all idrac9 tables.

```
ALTER TABLE idrac9_measurements SET (
  timescaledb.compress,
  timescaledb.compress_segmentby = ‘nodeid'
);

SELECT add_compression_policy(‘idrac9_measurements', INTERVAL '7 days');
```

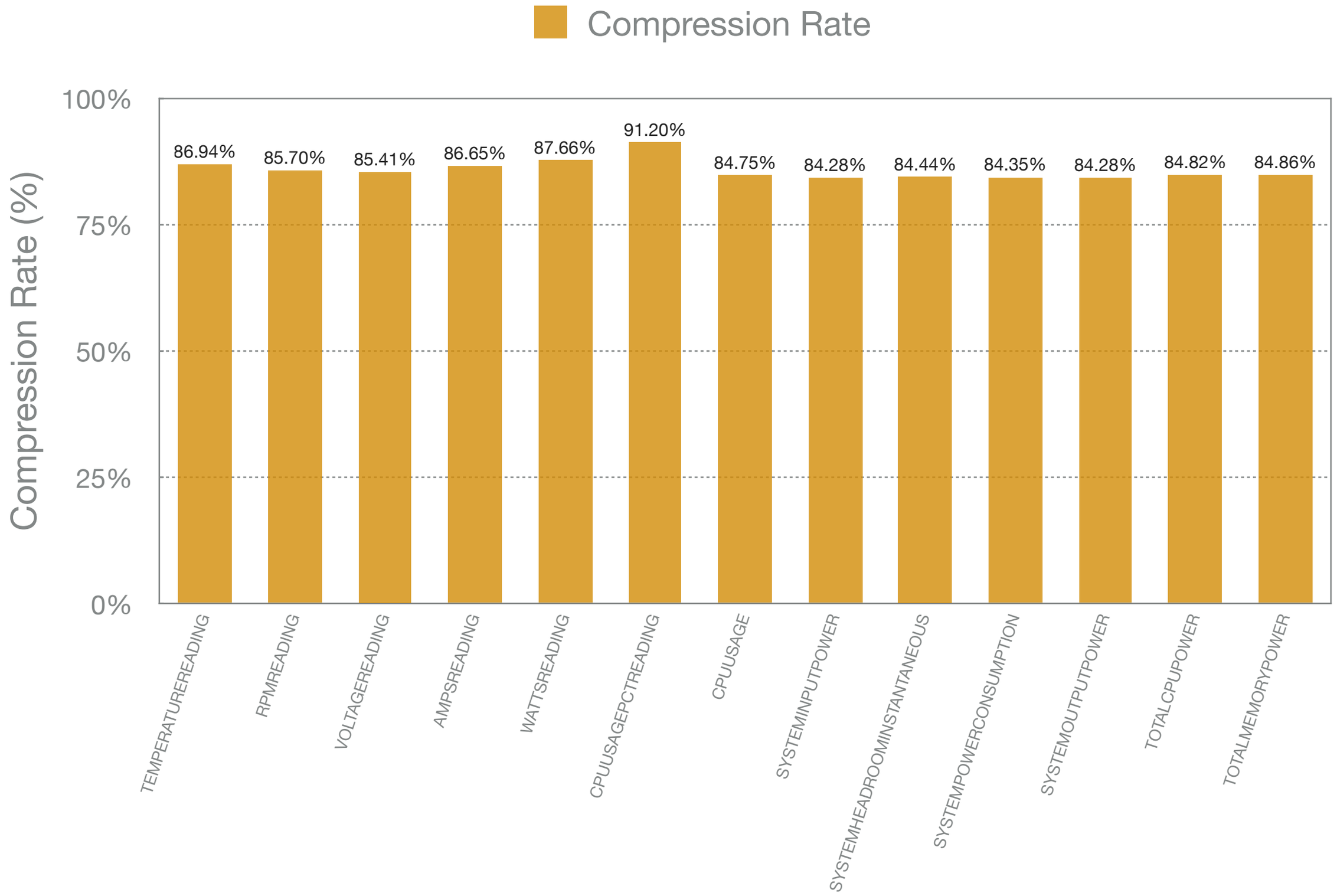
Configure compression and compress chunks older than 7 days.

TIMESCALE DB COMPRESSION



(The monitoring data is collected from March 24th to Jun 2nd)

TIMESCALE DB COMPRESSION



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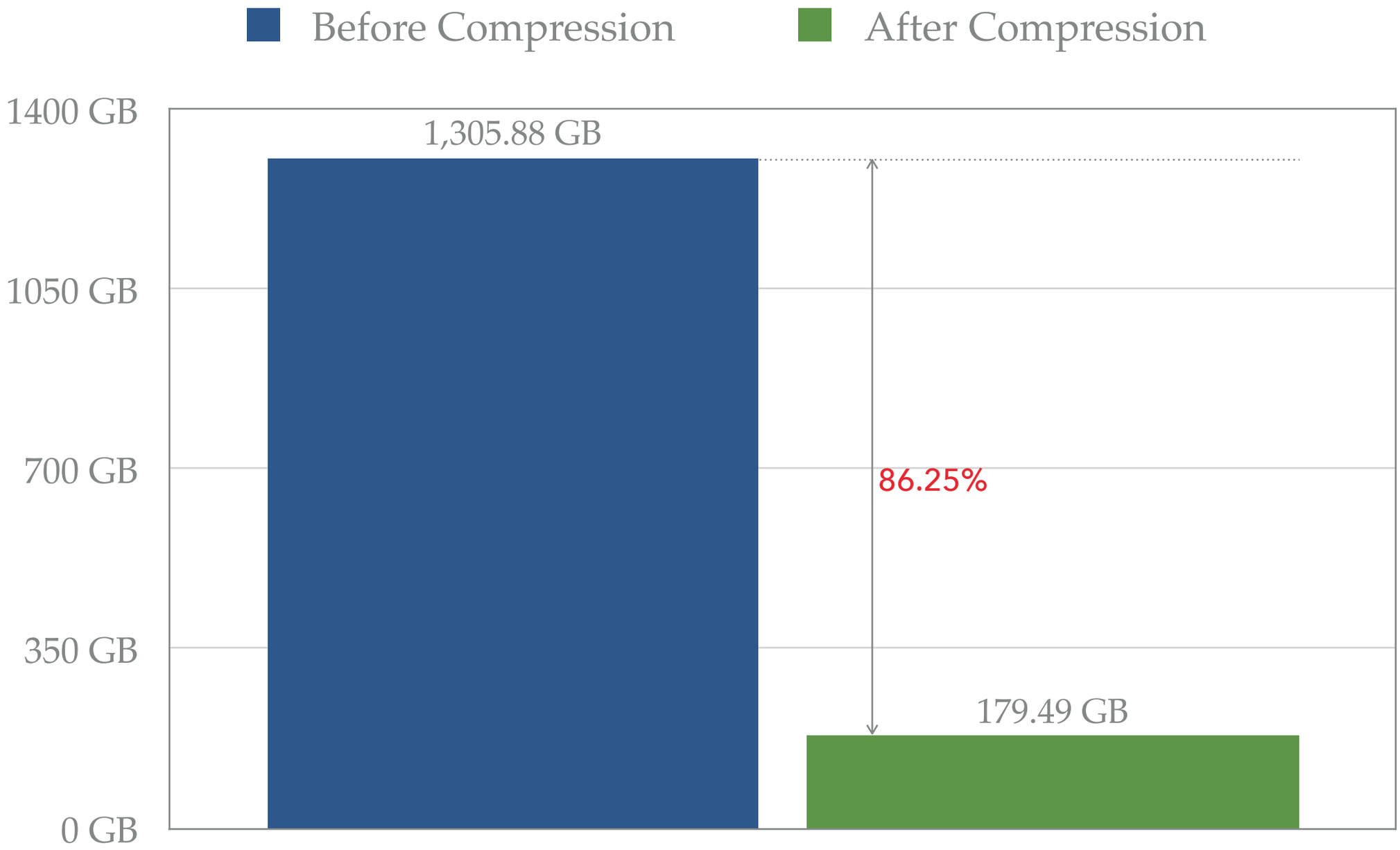
TIMESCALE DB COMPRESSION



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QUESTIONS?/COMMENTS?

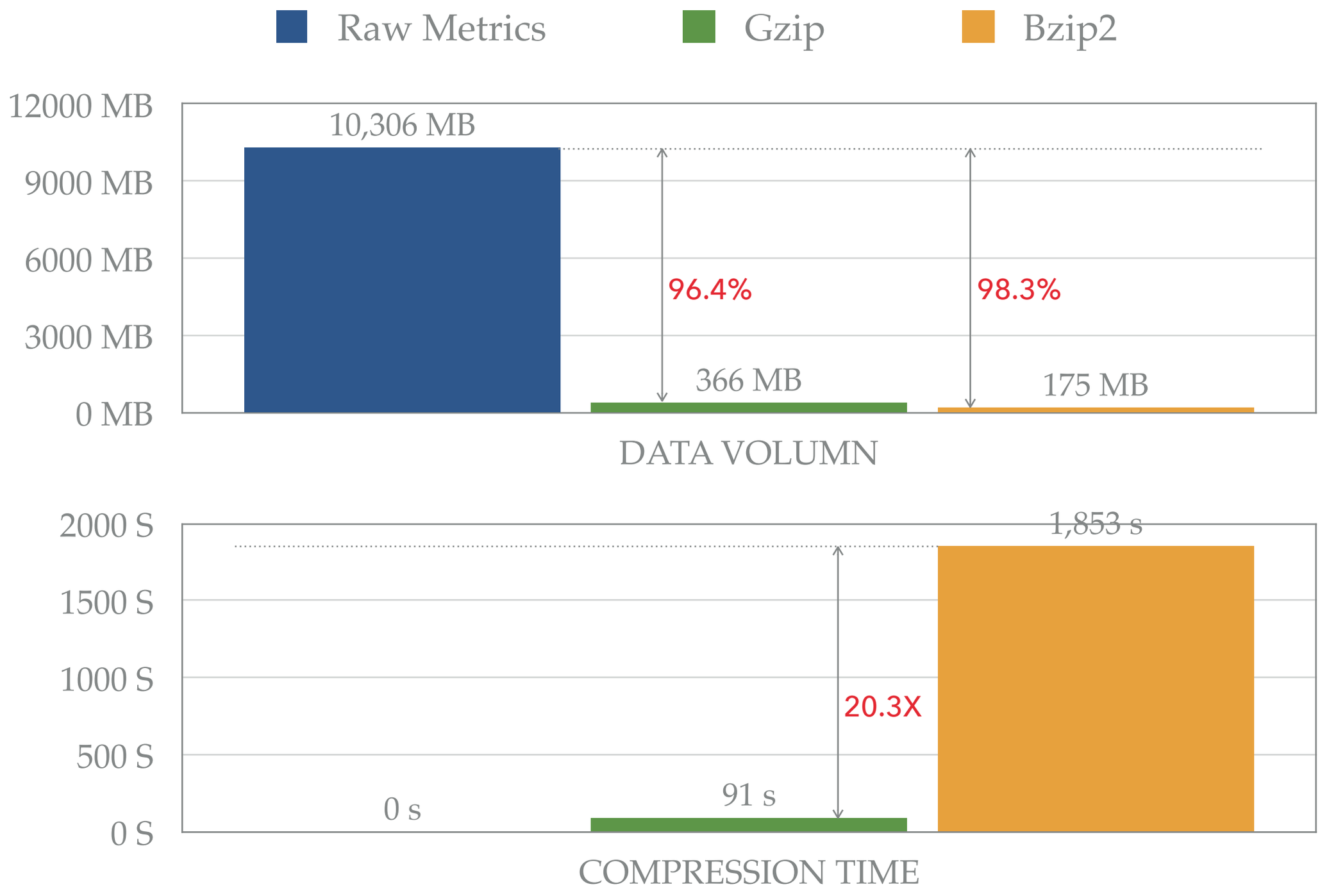
LAST MEETING

- Managing the growing amount of monitoring data.
  - Drop metrics that have values of 0, e.g., iousage, memoryusage, totalfanpower, etc.
  - NIC metrics (27 metrics)? e.g., txbytes, txbroadcast, etc.
  - Save old metrics (e.g., metrics collected one month ago) to zipped files.
- JSON: save json format data while collecting metrics.
- CSV: export csv files from TimescaleDB.

```
record = {
    'Timestamp': time,
    'Source': source,
    'FQDD': fqdd,
    'Value': value
}
```

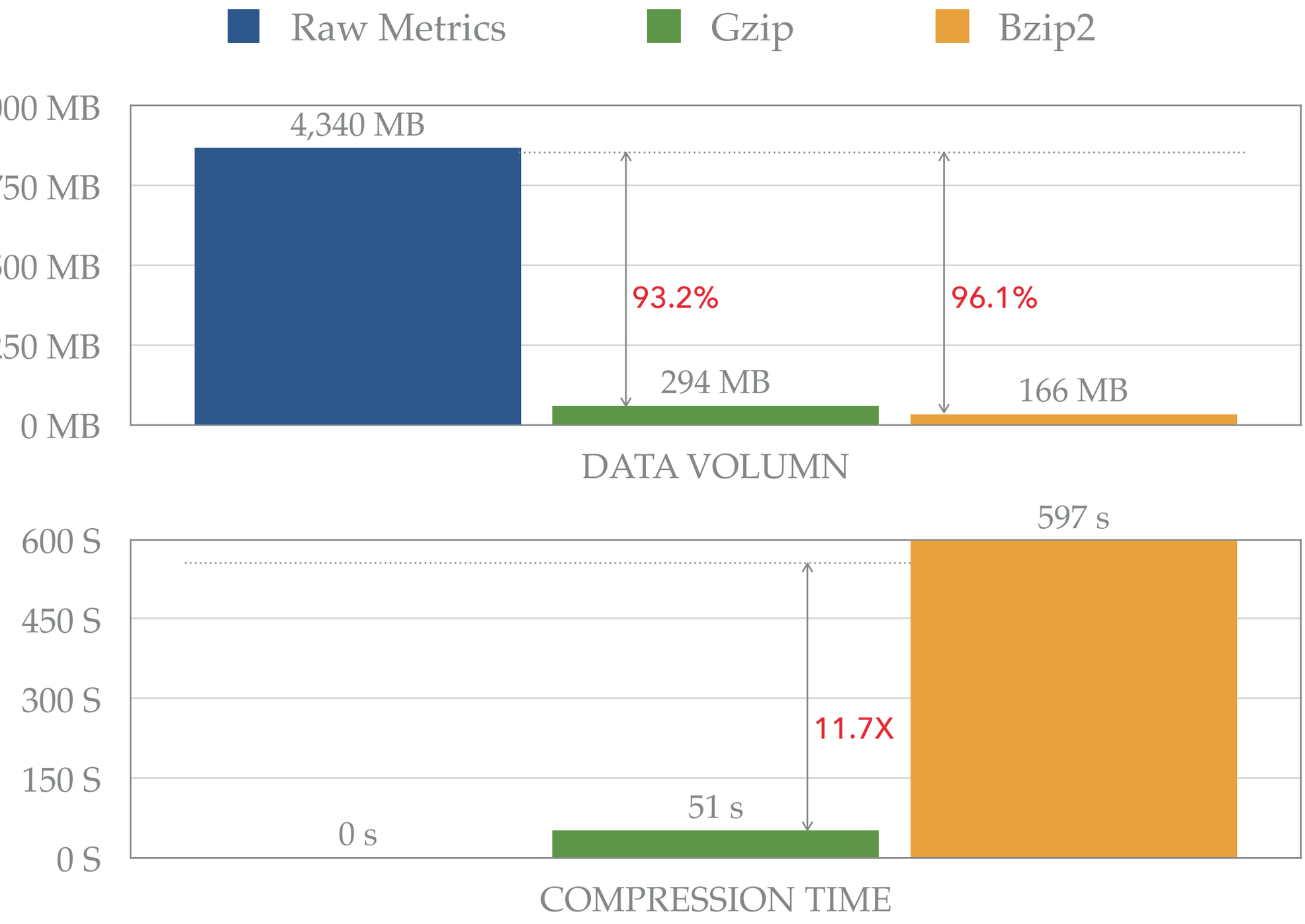
timestamp	nodeid	source	fqdd	value
2021-05-23 14:00:00-05	705	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	672	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	672
2021-05-23 14:00:00-05	697	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	692	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	551	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	658
2021-05-23 14:00:00-05	532	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	680	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	704	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	644
2021-05-23 14:00:00-05	505	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	602	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	674	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	322
2021-05-23 14:00:00-05	696	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	719	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	644
2021-05-23 14:00:00-05	670	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	574
2021-05-23 14:00:00-05	528	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	616
2021-05-23 14:00:00-05	603	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	713	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	710	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	336
2021-05-23 14:00:00-05	533	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	616
2021-05-23 14:00:00-05	728	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	687	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	725	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308
2021-05-23 14:00:00-05	700	rawsensor	iDRAC.Embedded.1#SystemBoardPwrConsumption	308

COMPRESS METRICS - JSON



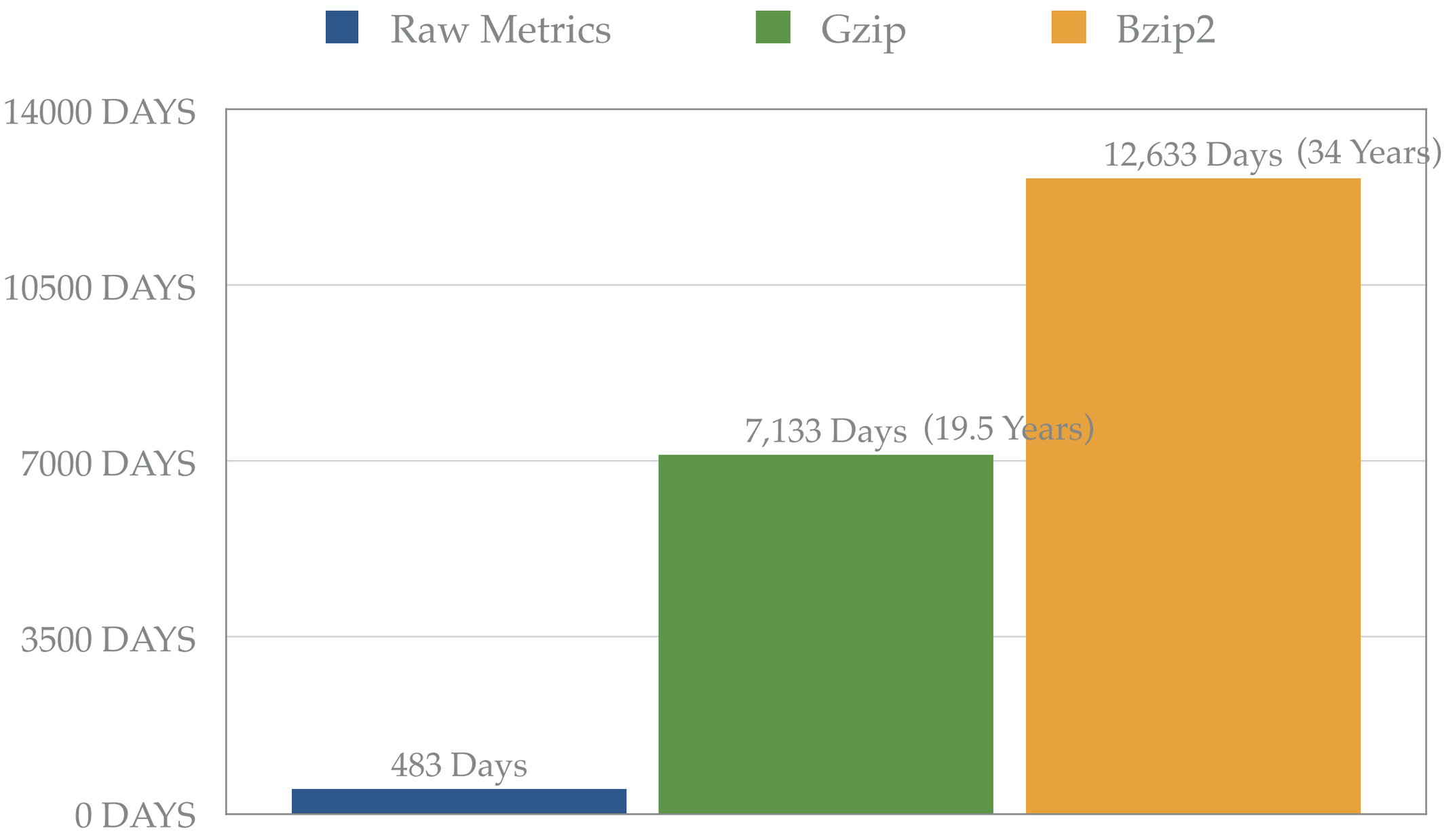
1 day of iDRAC9 monitoring data on the RedRaider Cluster

COMPRESS METRICS - CSV



1 day of iDRAC9 monitoring data on the RedRaider Cluster

COMPRESS METRICS - CSV



Suppose the available disk space is 2T

CONCLUSION

- Archiving monitoring metrics in files alleviates the data storage pressure.
- Storing data in CSV files consumes less storage.
- CSV files are much more simpler and more efficient to be loaded into TimescaleDB.

- TimescaleDB provides built-in compression mechanisms and deserves further exploring.