INTEGRATED VISUALIZING, MONITORING, AND MANAGING HPC SYSTEMS

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BENCHMARKING DB

▸ Dataset:

  ▸ Digital Environment Home Energy Management System (DEHEMS), monitor the energy used by each household.

  ▸ Regular sensor readings coming at every 6 seconds.

  ▸ Each household has an average of 10 sensors.

▸ Databases:

  ▸ BerkeleyDB: not a relational db, stores arbitrary key/value pairs as byte arrays.

  ▸ Hypertable: db runs on top of a distributed file system.

  ▸ Informix: RDBMS, support for the management of time-series data.

  ▸ MySQL: a multi-threaded, multi-user and robust SQL db.

  ▸ MonetDB: column-oriented DB, provide high performance on complex queries.

  ▸ PostgreSQL: RDBMS, highly scalable in the number of concurrent users

  ▸ SQLite: RDBMS, embedded into the end program, stores databases directly in a disk file

▸ Hardware environment is not mentioned in the paper.

Ref: Pungilă, Ciprian, Teodor-Florin Fortiş, and Ovidiu Aritoni. "Benchmarking database systems for the requirements of sensor readings." *IETE Technical Review* 26, no. 5 (2009): 342-349.

BENCHMARKING DB

Estimation table based on the sensors and nodes of the RedRaider Cluster (Nocona):

Nodes	Data metrics per Node	Poll Frequency	Avg. Rec./sec.	Rec./min.	Rec./hour	Rec./day	Rec./month	Rec./year
1	~180	5s	36	2,160	129,600	3,110,400	93,312,000	1,119,744,000
240	~180	5s	8,640	518,400	31,104,000	746,496,000	22,394,880,000	268,738,560,000
					31 mil	**746 mil**	**22 bil**	**268 bil**

BENCHMARKING DB

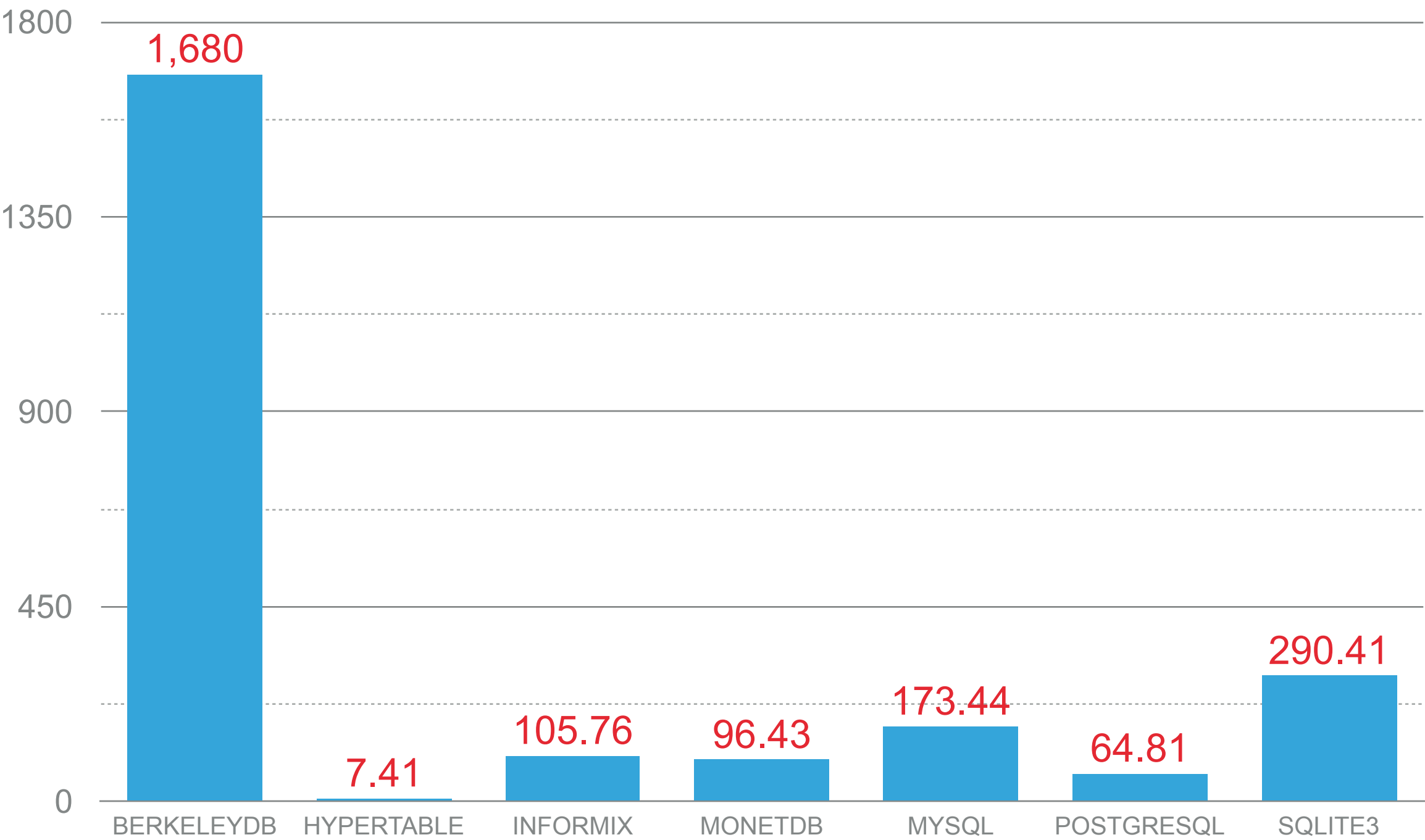Average inserting speed (1000 rec./sec.)

Around 4 million records, data obtaining rate: 8340 rec./sec.
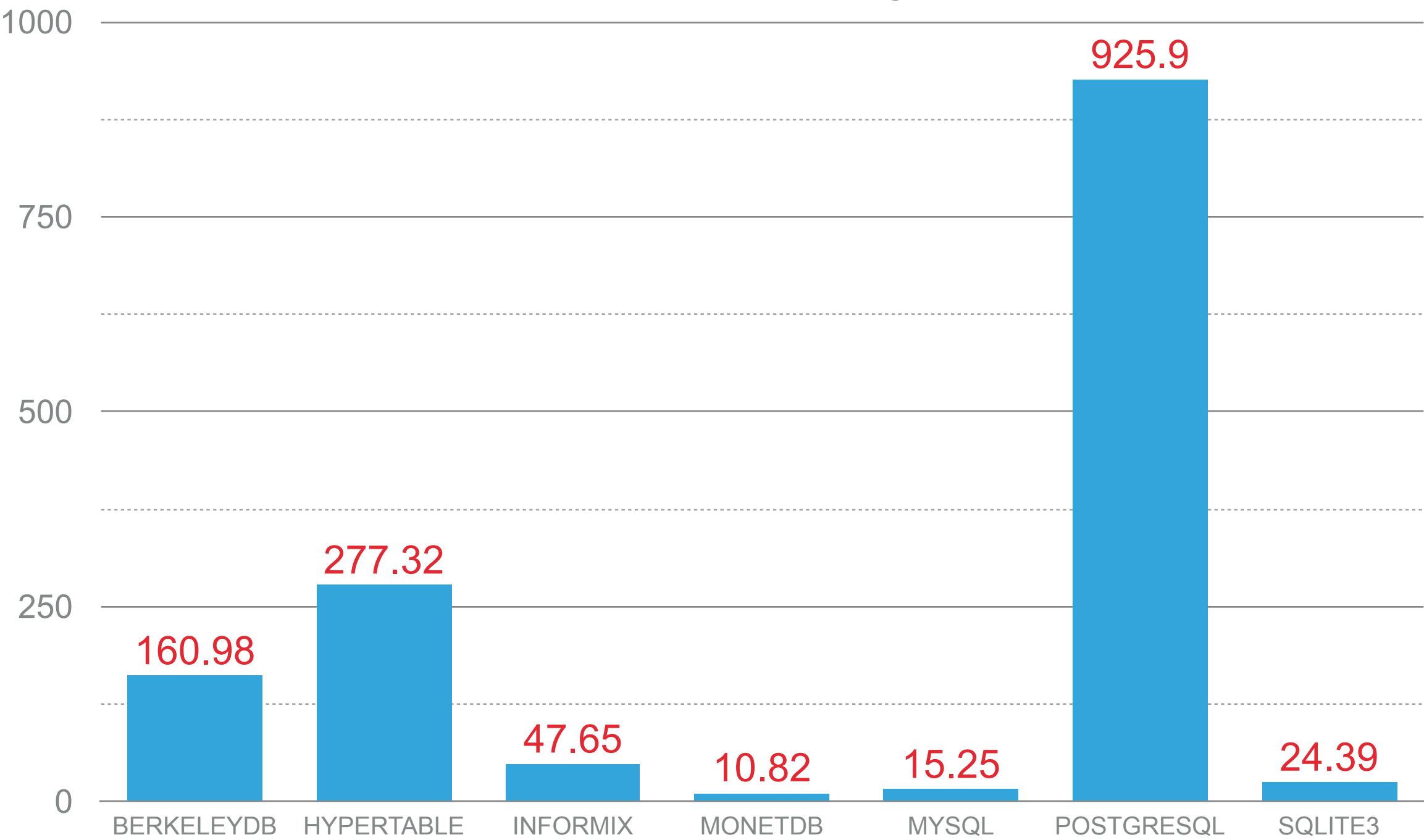
Data get from: Pungilă, Ciprian, Teodor-Florin Fortiş, and Ovidiu Aritoni. "Benchmarking database systems for the requirements of sensor readings." *IETE Technical Review* 26, no. 5 (2009): 342-349.

BENCHMARKING DB

Average scanning speed (1000 rec./sec.)

Bar chart values:
- BERKELEYDB: 1,680
- HYPERTABLE: 7.41
- INFORMIX: 105.76
- MONETDB: 96.43
- MYSQL: 173.44
- POSTGRESQL: 64.81
- SQLITE3: 290.41

Y-axis: 0, 450, 900, 1350, 1800

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QUESTIONS?/COMMENTS?