

# Compared Performance Buffered I/O with Direct I/O in PostgreSQL archive mode

We used these servers in this performance test.

	Database server	DBT2 client and driver server
Server	HP ProLiant DL380G7	HP ProLiant BL460c G1
CPU	Intel Xeon E5620 2.40GHz * 16 cores	Intel(R) Xeon(R) CPU L5420 2.50GHz * 2
MEMORY	32GB	16GB
DISK	RAID 0 146GB * 8	131GB
OS	Red Hat Enterprise Linux 6.1 64bit	Red Hat Enterprise Linux 6.1 64bit
Kernel	2.6.32-131.0.15.el6	2.6.32-131.0.15.el6
Network	2 Ethernet	2 Ethernet
PostgreSQL Version	PostgreSQL9.1.2	PostgreSQL9.0.3

- \* We measured in DBT-2 benchmark created by OSDL.
- \* Compared buffered I/O (normal cp command )with direct I/O (direct\_cp) at archive command in postgresql.conf in PostgreSQL.

Results of DBT-2 are under following tables.

## Buffered I/O (normal cp command)

Number of WH	270	290	310	330	350	370
WIPS						
Real result[BT/sec]	—	3672	3826	3771	3578	—
Ideal result[BT/sec]	—	3741	3999	4257	4515	—
Real / Ideal [%]	—	98.1%	95.6%	88.6%	79.2%	—
Response						
90%tile [sec]	—	0.26	3.59	6.62	9.91	—

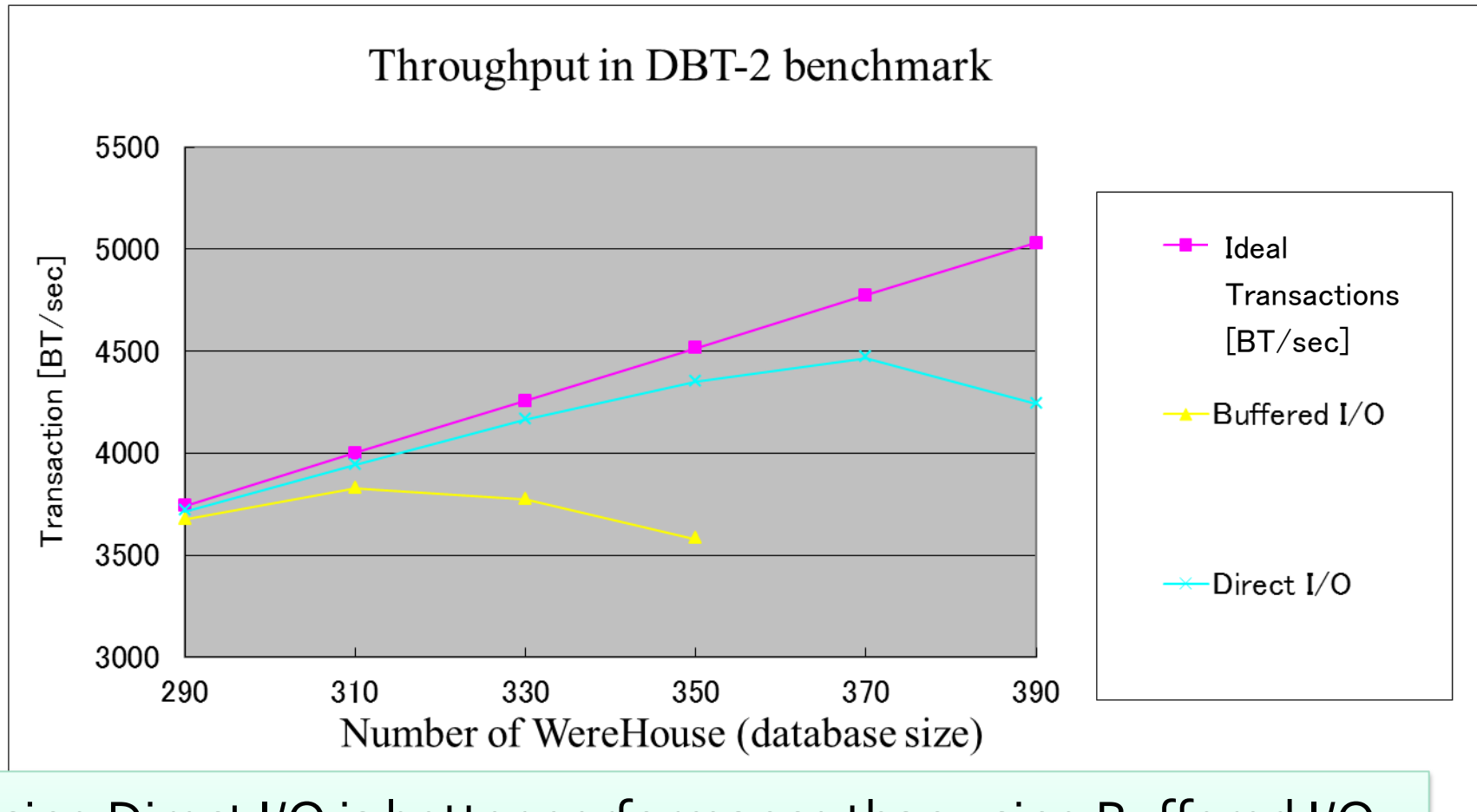
## Direct I/O (direct cp)

Number of WH	270	290	310	330	350	370	390	410
WIPS								
Real [BT/sec]	—	3715	3940	4165	4394	4465	4239	—
Ideal [BT/sec]	—	3940	3999	4257	4515	4773	5031	—
Real / Ideal [%]	—	99.3%	98.5%	97.8%	96.3%	93.5%	84.2%	—
Response								
90%tile [sec]	—	0.03	0.05	0.2	0.81	2.46	8.28	—

Using Direct I/O is better performance than using Buffered I/O in all benchmarks.

# Result : graph

## Compare Buffered I/O with Direct I/O in DBT-2 Benchmark



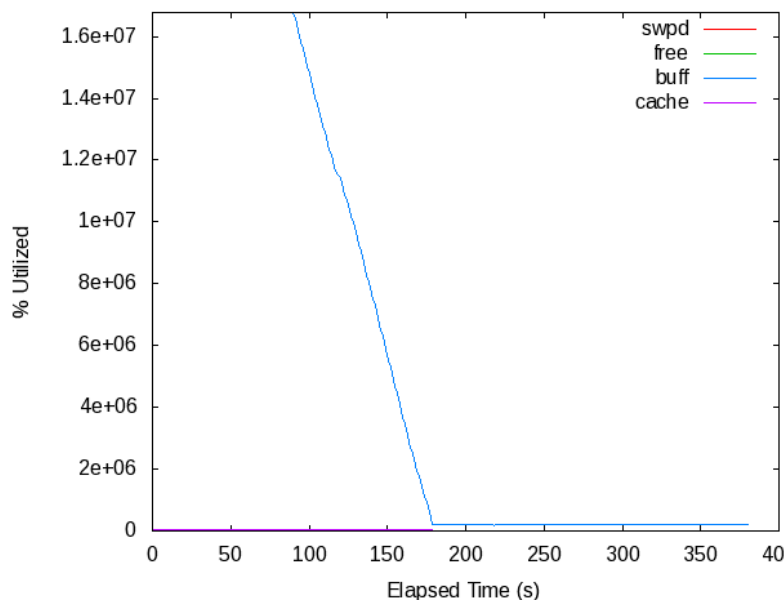
Using Direct I/O is better performance than using Buffered I/O in all benchmarks.

# Result : Memory efficiency

## Amount of Memory Usage in DBT-2 Testing

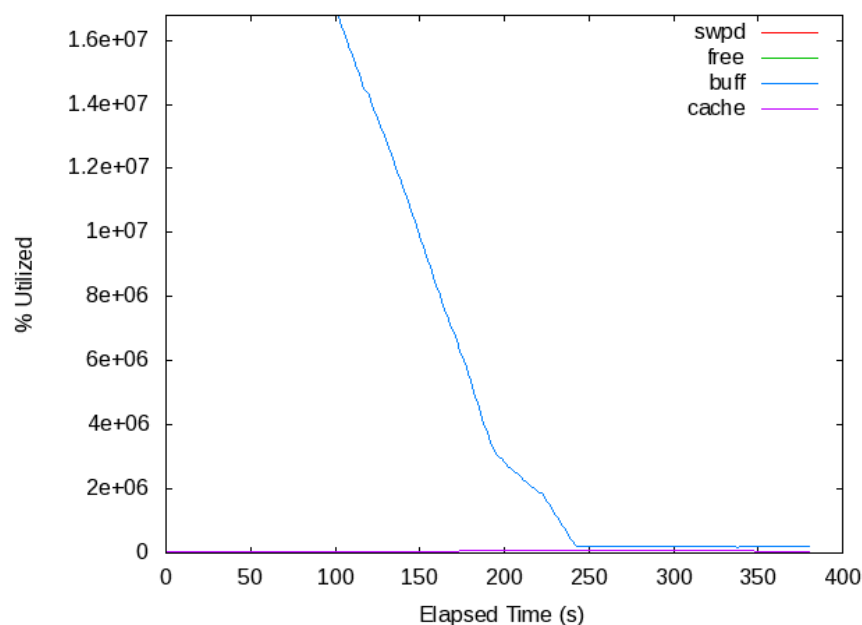
WH=330

### Buffered I/O (normal cp command)



WH=330

### Direct I/O (direct\_cp)



It is indicated that direct I/O(direct\_cp) uses file caches more efficiency!