System A / scale 500

Patch comparison
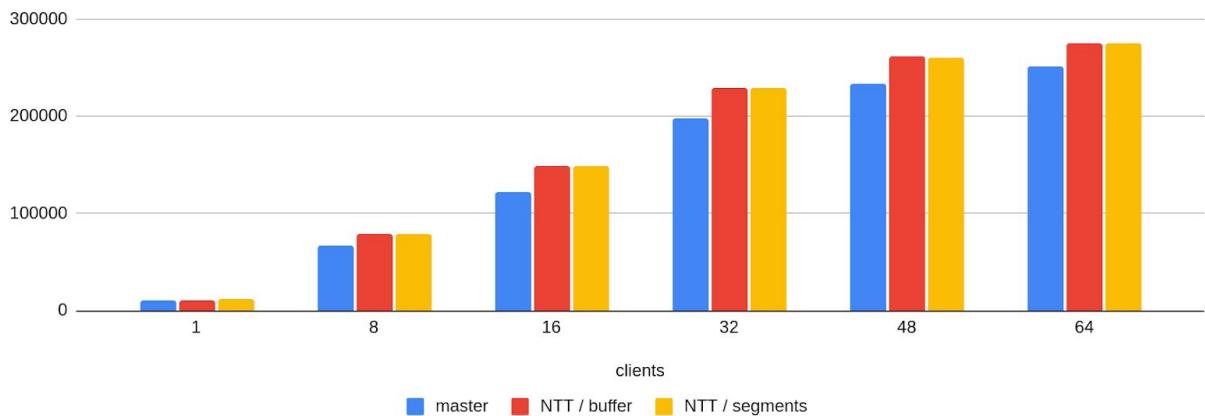
System A, scale 500, 16MB WAL segments, FPW on

	1	8	16	32	48	64
master	9411	58833	111453	181681	215552	234099
NTT / buffer	10837	77260	145251	222586	255651	264207
NTT / segments	11011	76892	145049	223078	255022	269737

Patch comparison

System A, scale 500, 16MB WAL segments, FPW off
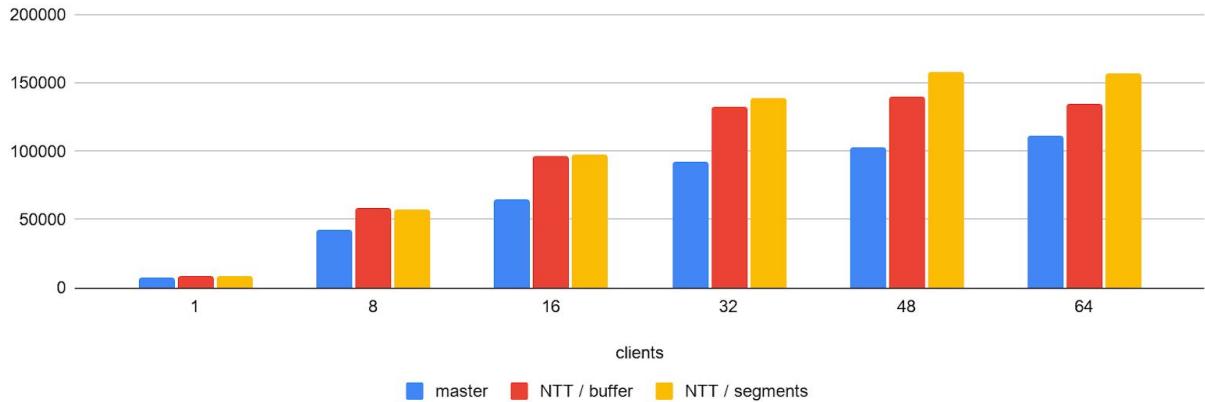
	1	8	16	32	48	64
master	10476	67191	122191	198620	234381	251452
NTT / buffer	11119	79530	148580	229523	262142	275281
NTT / segments	11528	79004	148978	229714	259798	274753

System A / scale 5000

Patch comparison
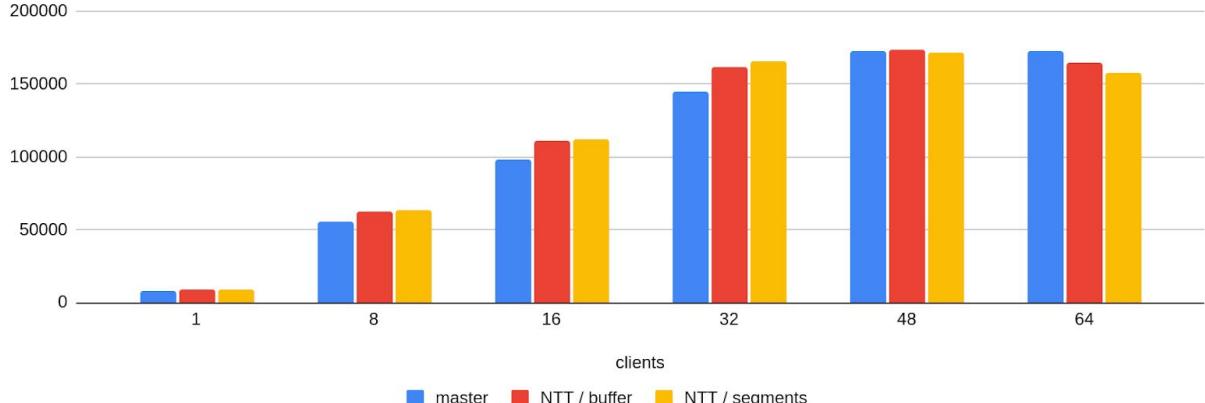
System A, scale 5000, 16MB WAL segments, FPW on

	1	8	16	32	48	64
master	7388	42020	64523	91877	102805	111389
NTT / buffer	8650	58018	96314	132440	139512	134228
NTT / segments	8614	57286	97173	138435	157595	157138

Patch comparison

System A, scale 5000, 16MB WAL segments, FPW off
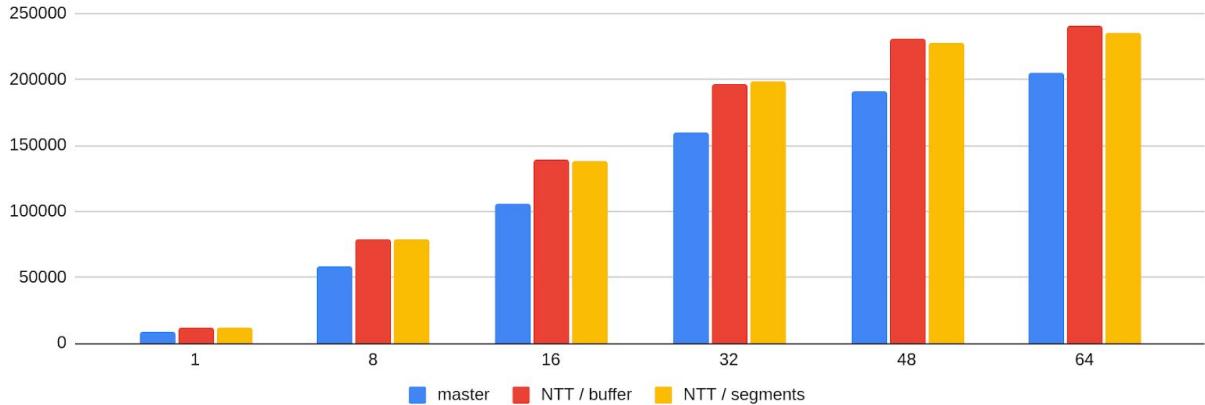
	1	8	16	32	48	64
master	8192	55870	98451	145097	172377	172907
NTT / buffer	9063	62659	110868	161352	173977	164359
NTT / segments	9277	63226	112307	166070	171997	158085

System B / scale 500

Patch comparison
System B, scale 500, 128MB WAL segments, FPW on
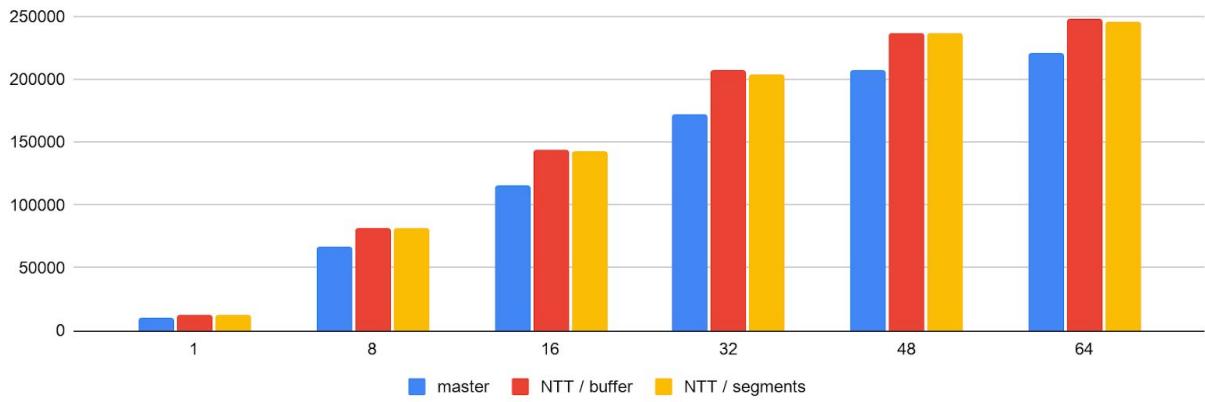
	1	8	16	32	48	64
master	8688	58549	105385	159692	190810	205003
NTT / buffer	11440	79146	139178	196188	230816	240501
NTT / segments	11594	78593	137868	199109	227425	235082

## Patch comparison
System B, scale 500, 128MB WAL segments, FPW off
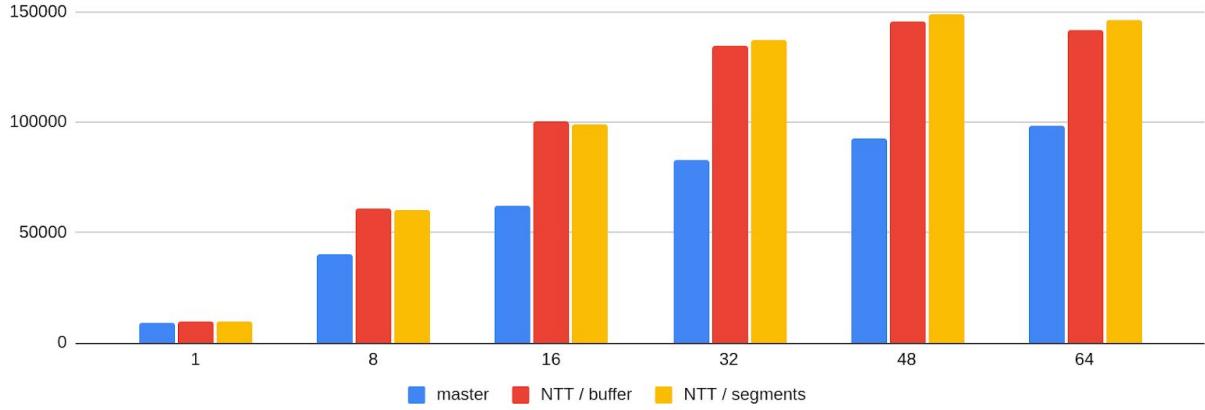
	1	8	16	32	48	64
master	10851	67110	116079	172420	207956	220622
NTT / buffer	12321	82011	144157	206880	236324	248170
NTT / segments	12345	81388	143401	204377	236476	245400

System B / scale 5000

Patch comparison
System B, scale 5000, 128MB WAL segments, FPW on
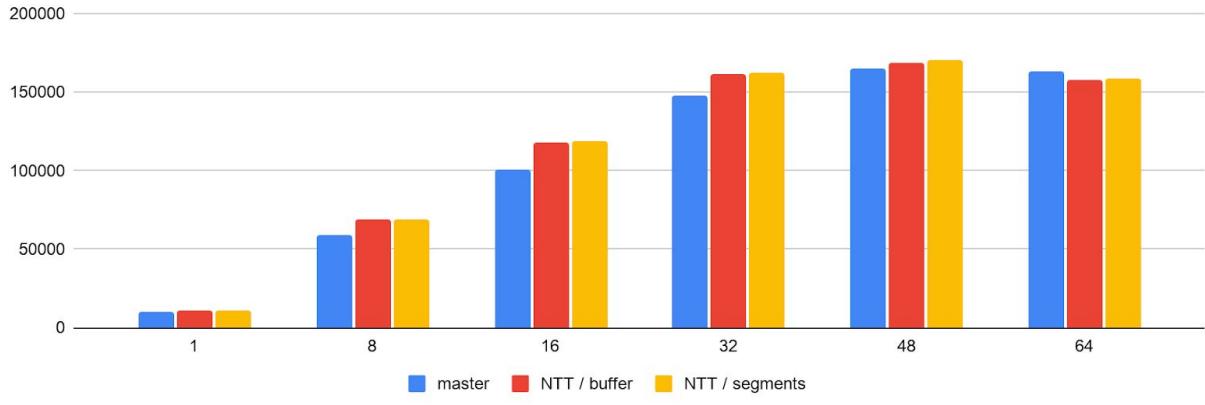
	1	8	16	32	48	64
master	8993	40270	61964	82692	92711	98511
NTT / buffer	9983	61188	100309	134599	145459	141952
NTT / segments	9828	60485	99408	137512	149254	146667

Patch comparison
System B, scale 5000, 128MB WAL segments, FPW off

	1	8	16	32	48	64
master	9838	58876	100554	147453	164766	163230
NTT / buffer	10540	68989	117626	160978	168977	157894
NTT / segments	10619	69311	119008	162408	170413	158252

Configurations

PostgreSQL

```
autovacuum_analyze_scale_factor = 0.1
autovacuum_vacuum_insert_scale_factor = 0.05
autovacuum_vacuum_scale_factor = 0.01
bgwriter_delay = 50
bgwriter_lru_maxpages = 1000
checkpoint_completion_target = 0.9
checkpoint_timeout = '20min'
effective_io_concurrency = 128
maintenance_io_concurrency = 128
maintenance_work_mem = '256MB'
max_connections = 200
max_wal_size = '96GB'
max_worker_processes = 24
min_wal_size = '4GB'
random_page_cost = 1.2
shared_buffers = '16GB'
vacuum_cost_limit = 1000
work_mem = 64MB
```

System A

Platform	Purley Refresh
Baseboard	Wolf Pass
Processor	Cascade Lake 2x Intel(R) Xeon(R) Platinum 8268 CPU @ 2.90GHz (2x24/48 cores) performance governor
RAM	128GB RAM (8 x 16GB DDR4 2666 MT/s)
OS	Ubuntu 19.10 (GNU/Linux 5.3.0-64-generic x86_64) Linux a4bf01560ca2 5.3.0-64-generic #58-Ubuntu SMP Fri Jul 10 19:33:51 UTC 2020 x86_64 x86_64 x86_64 GNU/Linux
Storage	1TB PMEM (BTT) 1TB PMEM (DAX) 350GB NVMe (INTEL SSDPE21K375GA)
Filesystems	/dev/pmem1s on /opt/pmembtt type ext4 (rw,noatime,nodiratime,nobarrier)

| | /dev/nvme0n1p1 on /opt/nvme type ext4 (rw,noatime,nodiratime,nobarrier) |
| | /dev/pmem0 on /opt/pmemdax type ext4 (rw,noatime,nodiratime,nobarrier,dax,x-systemd.device-timeout=4) |

System B

Platform	Purley Refresh
Baseboard	Wolf Pass
Processor	Cascade Lake 2x Intel(R) Xeon(R) Gold 6248 CPU @ 2.50GHz (2x20/40 cores) performance governor
RAM	192GB RAM (12 x 16GB DDR4 2666 MT/s)
OS	Red Hat Enterprise Linux release 8.2 (Ootpa) Linux localhost.localdomain 4.18.0-193.el8.x86_64 #1 SMP Fri Mar 27 14:35:58 UTC 2020 x86_64 x86_64 x86_64 GNU/Linux
Storage	768GB PMEM (DAX) 768GB PMEM (DAX) 1GB NVMe (INTEL P4510)
Filesystems	/dev/pmem1p1 on /opt/pmemdax type ext4 (rw,relatime,seclabel,dax) /dev/pmem0 on /opt/pmemdax2 type ext4 (rw,relatime,seclabel,dax) /dev/nvme0n1p1 on /opt/nvme type xfs (rw,relatime,seclabel,attr2,inode64,noquota)