Shared IPC

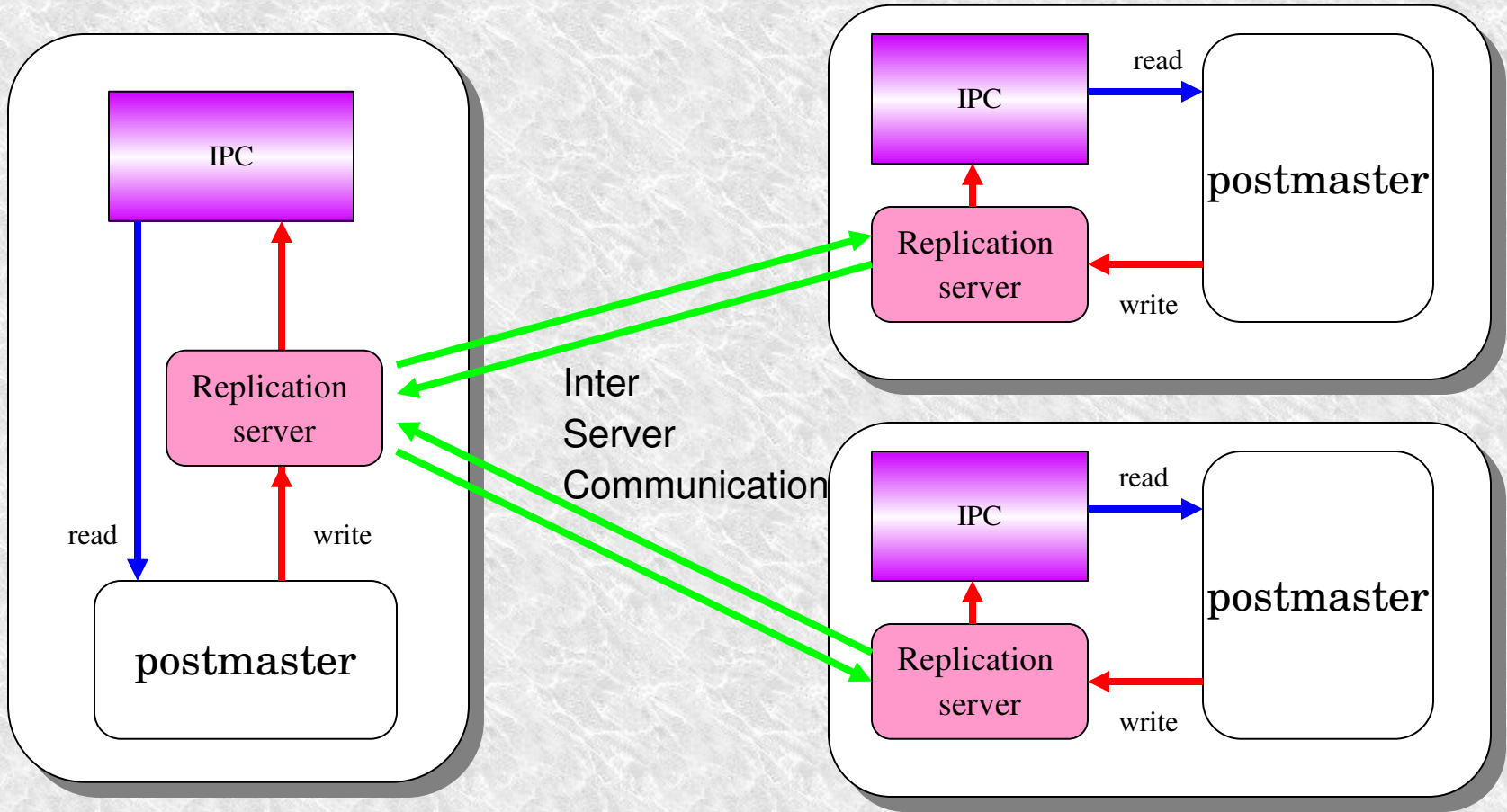postmaster   postmaster   postmaster

Shared storage
SAN /NAS

Fig.1 Concept of PGCluster-II

Fig.2 Server structure

Table 1. Patch point of semaphore

Interface function	Source	Target function
PGReserveSemaphores()	storage/ipc/ipci.c	CreateSharedMemoryAndSemaphore
PGSemaphoreCreate()	storage/lmgr/spin.c	SpinlockSemas()
PGSemaphoreReset()	storage/lmgr/proc.c	ProcCancelWaitForSignal()
		LockWaitCancel()
PGSemaphoreLock()	storage/lmgr/lwlock.c	LWLockAcquire()
	storage/lmgr/proc.c	ProcSleep()
		ProcWaitForSignal()
PGSemaphoreUnlock()	storage/lmgr/lwlock.c	LWLockAcquire()
		LWLockRelease()
	storage/lmgr/proc.c	ProcWakeup()
		CheckDeadLock()
		ProcSendSignal()
	storage/lmgr/spin.c	s_unlock_sema()
PGSemaphoreTryLock()	storage/lmgr/spin.c	tas_sema()

6 delegate functions   Called 14 functions

Table 2. Patch point of shared memory

BgWriterShmem	postmaster/bgwriter.c	BackgroundWriterMain()
		BgWriterShmemInit()
MultiXactState	access/transam/multixact.c	GetNewMultiXactId()
		MultiXactShmemInit()
		StartupMultiXact()
		MultiXactSetNextMXact()
		MultiXactAdvanceNextMXact()
		TruncateMultiXact()
TwoPhaseState	access/transam/twophase.c	TwoPhaseShmemInit()
		MarkAsPreparing()
		RemoveGXact()
ControlFile	access/transam/xlog.c	XLogWrite()
		WriteControlFile()
		ReadControlFile()
		UpdateControlFile()
		XLOGShmemInit()
		BootStrapXLOG()
		StartupXLOG()
		CreateCheckPoint()
XLogCtl	access/transam/xlog.c	XLogInsert()
		AdvanceXLInsertBuffer()
		XLogWrite()
		XLOGShmemInit()

BufferDescriptors	storage/buffer/buf_init.c	InitBufferPool()
	storage/buffer/bufmgr.c	ReadBuffer()
		PinBuffer()
	storage/buffer/freelist.c	StrategyGetBuffer()
		StrategyFreeBuffer()
BufferBlocks	storage/buffer/buf_init.c	
StrategyControl	storage/buffer/freelist.c	StrategyGetBuffer()
		StrategyFreeBuffer()
		StrategyInitialize()
FreeSpaceMap	storage/freespace/freespace.c	InitFreeSpaceMap()
		delete_fsm_rel()
		realloc_fsm_rel()
		link_fsm_rel_usage()
		unlink_fsm_rel_usage()
		link_fsm_rel_storage()
		unlink_fsm_rel_storage()
		compact_fsm_storage()
		push_fsm_rels_after()
PMSignalFlags	storage/ipc/pmsignal.c	PMSignalInit()
		SendPostmasterSignal()
		CheckPostmasterSignal()
procArray	storage/ipc/procarray.c	CreateSharedProcArray()
		ProcArrayAdd()
		ProcArrayRemove()

shmInvalBuffer	storage/ipc/sinvaladt.c	SIBufferInit()
newLockMethod	storage/lmgr/lock.c	LockMethodTableInit()
ProcGlobal	storage/lmgr/proc.c	InitProcGlobal()
		ProcKill()
		DummyProcKill()
DummyProcs	storage/lmgr/proc.c	InitProcGlobal()

15 pointers

Called from 50 functions