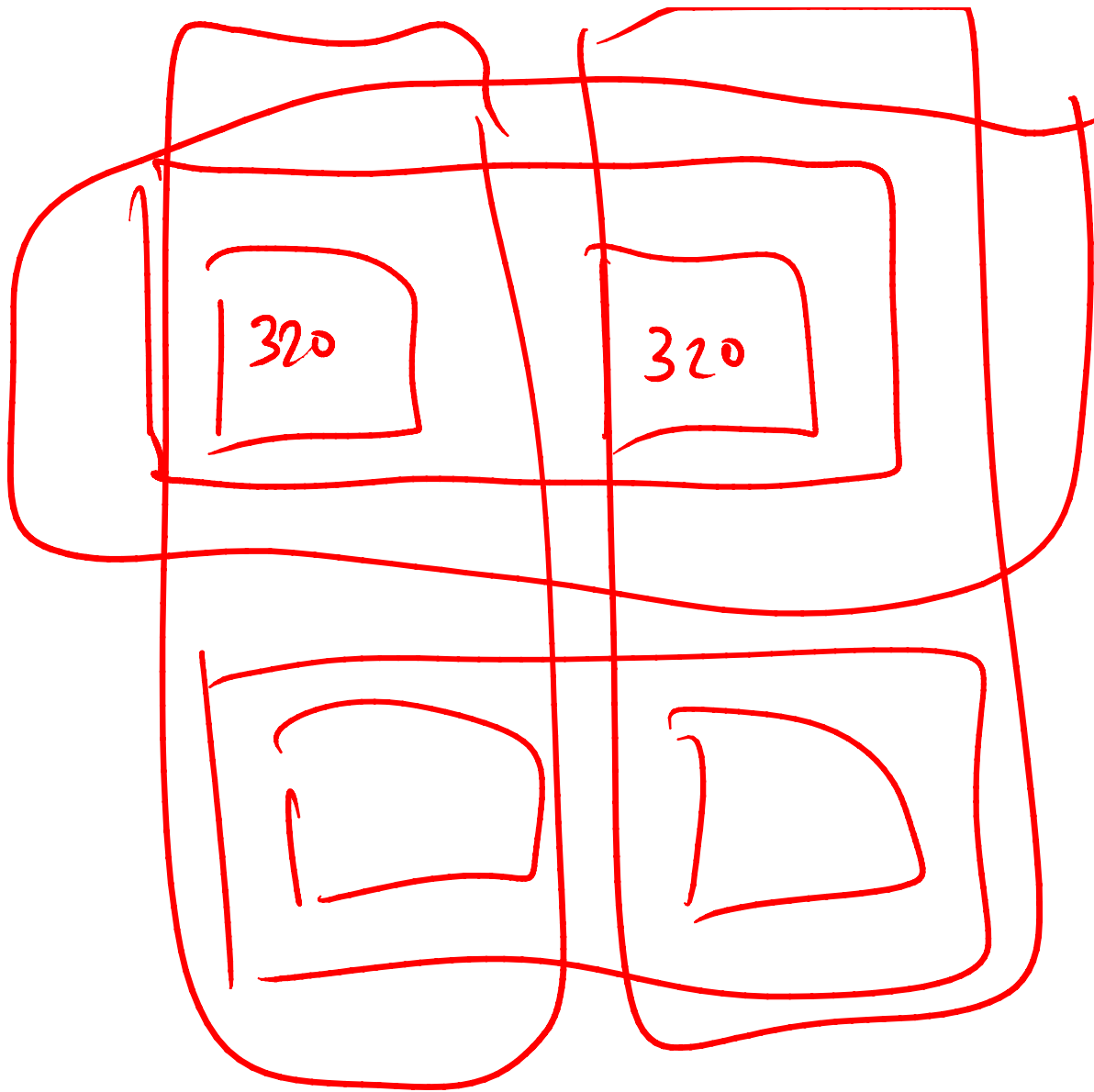


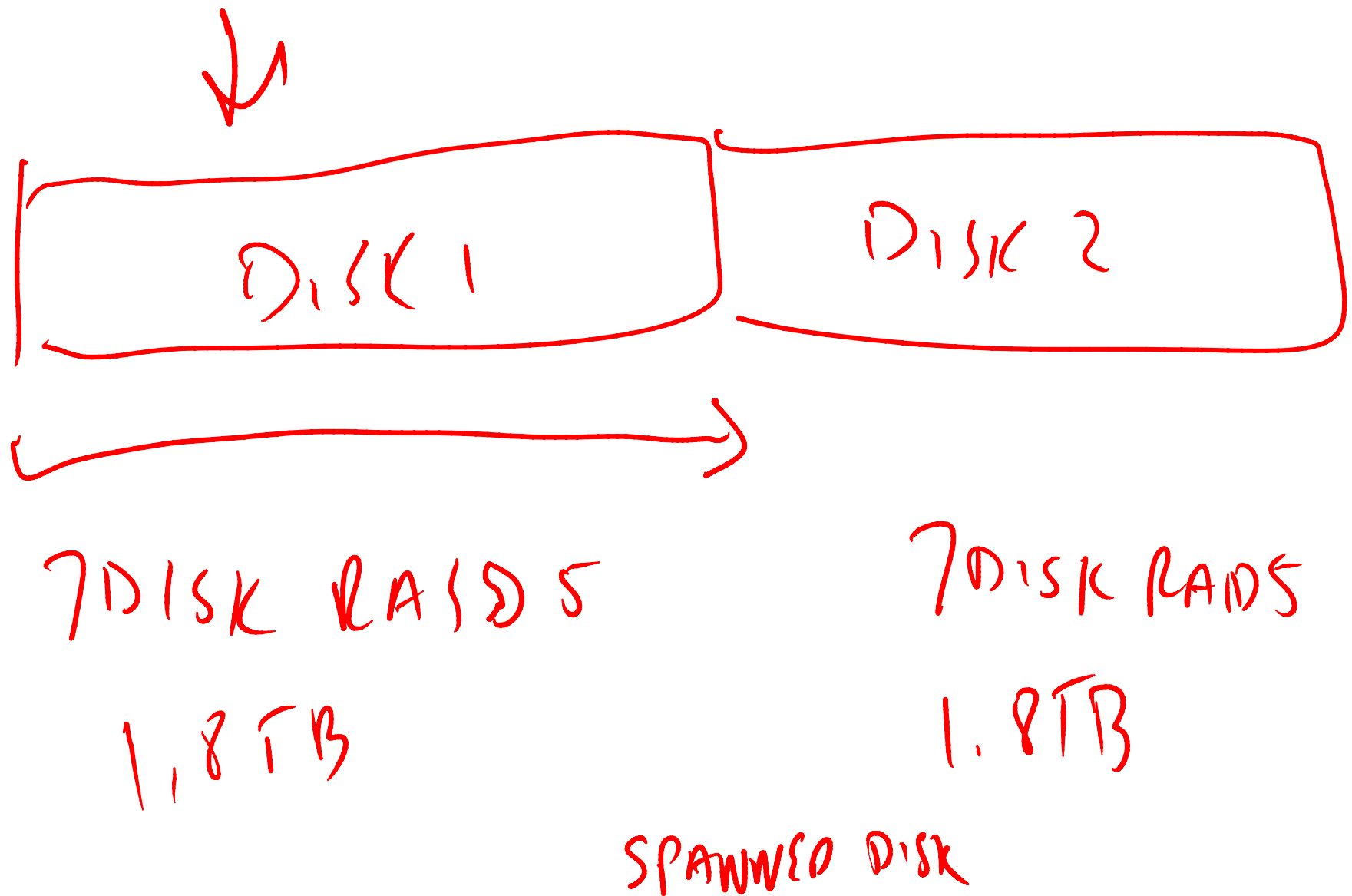


RAID 0

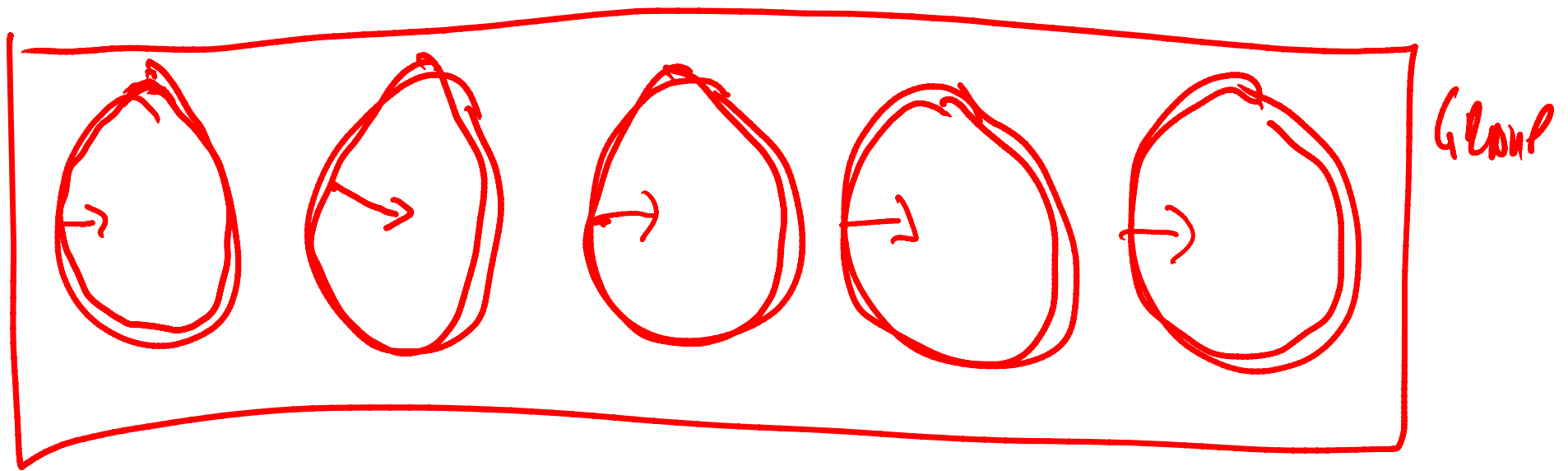
RAID 1

RAID 1

Fusion-IO or other PCI-Express SSD RAID setup should be across cards for high availability and redundancy instead of being RAID 0 within a single card.



Spanned Dynamic Disks in Windows are more for file share servers due to the nature of how they work. The first disk in the span has to be 100% utilized before the second disk begins to be written to.

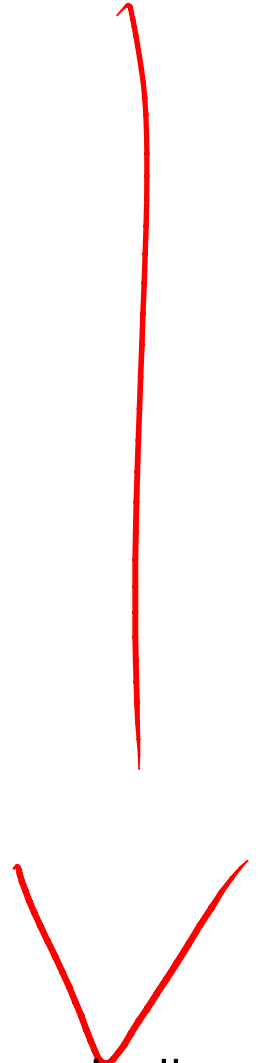
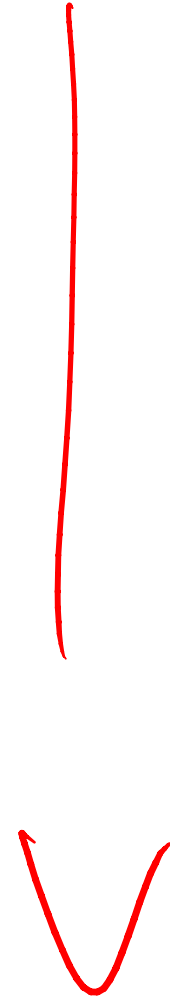
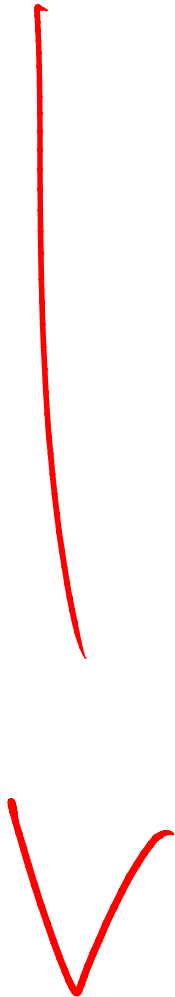
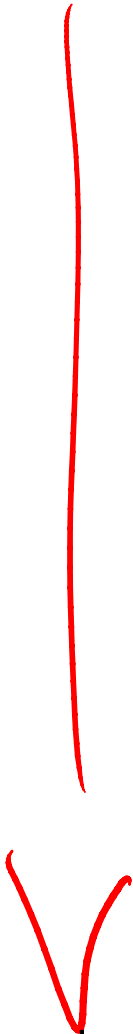
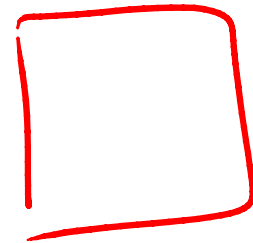
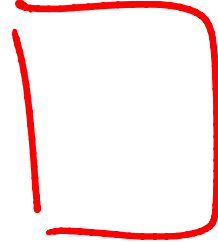
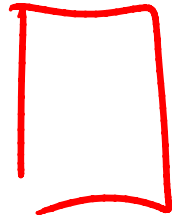
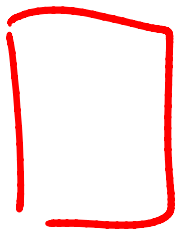


300 RAID 5 1 Disk lost

1.2TB

240GB

This slide shows short stroking of a RAID 5 array using five 300GB 15K RPM disks. The available capacity is 1.2TB so if we wanted to short stroke this to 120GB we would use the outer 10% of each disk, reducing the seek time for the access latency overall.



Increasing max worker threads only increases the queue for each scheduler, it doesn't allow more work to be done.

Parallel Query

1 Parent Task

17

DOP Producers

65

DOP Consumers

THREAD POOL

1
12
16
72

12
192
512
704

The effect or overhead to thread usage for parallelism can be 1 parent thread and up to 2 threads per level of DOP per concurrently executing parallel zone within a query plan.

(max workers x thread stack)

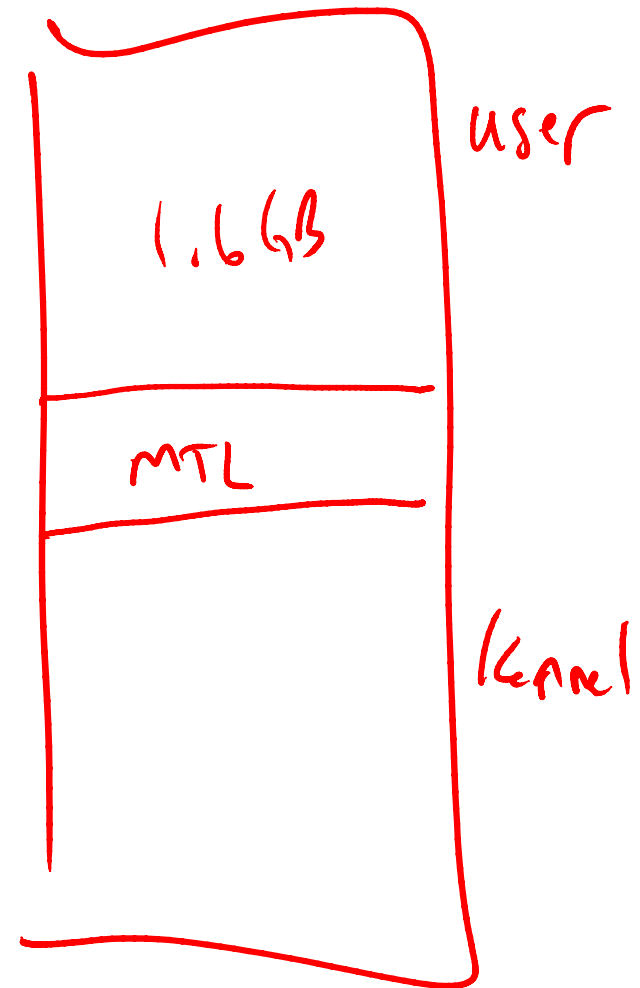
max mem.

+

256MB

384MB

2GB

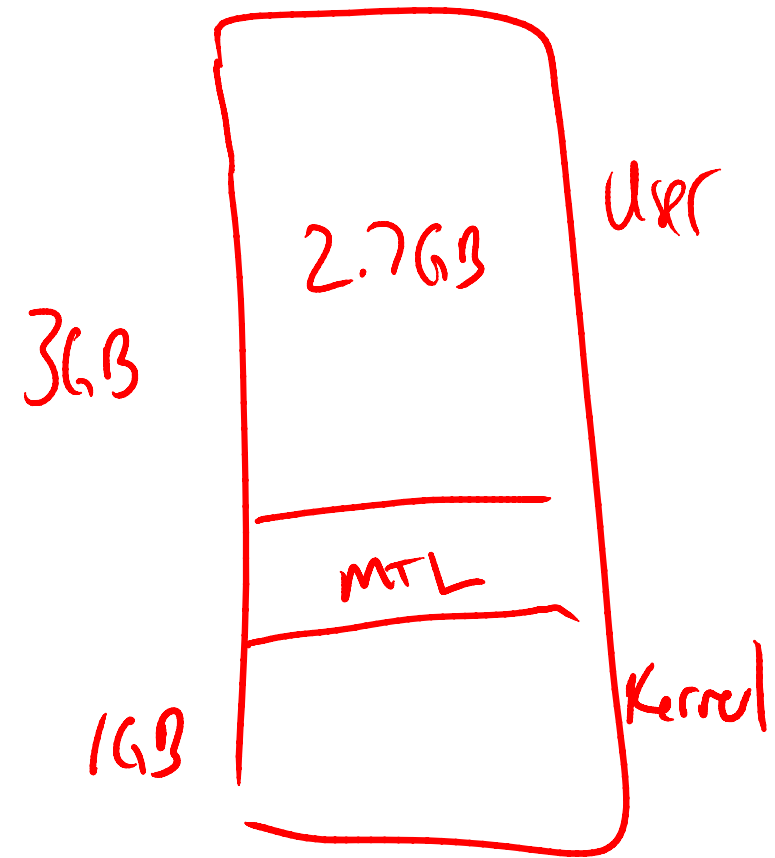


701 fail - virtual alloc

4GB

The default Windows OS split for VAS is 50/50 or 2GB/2GB for user and kernel mode VAS. The user mode VAS is the upper limit of memory an application can use without advanced options like AWE. The memtoleave VAS reserve is calculated at startup from (max worker threads*stack size) +256 and then buffer pool is sized based on 'max server memory' or the available VAS remaining, which ever is larger when AWE is not used.

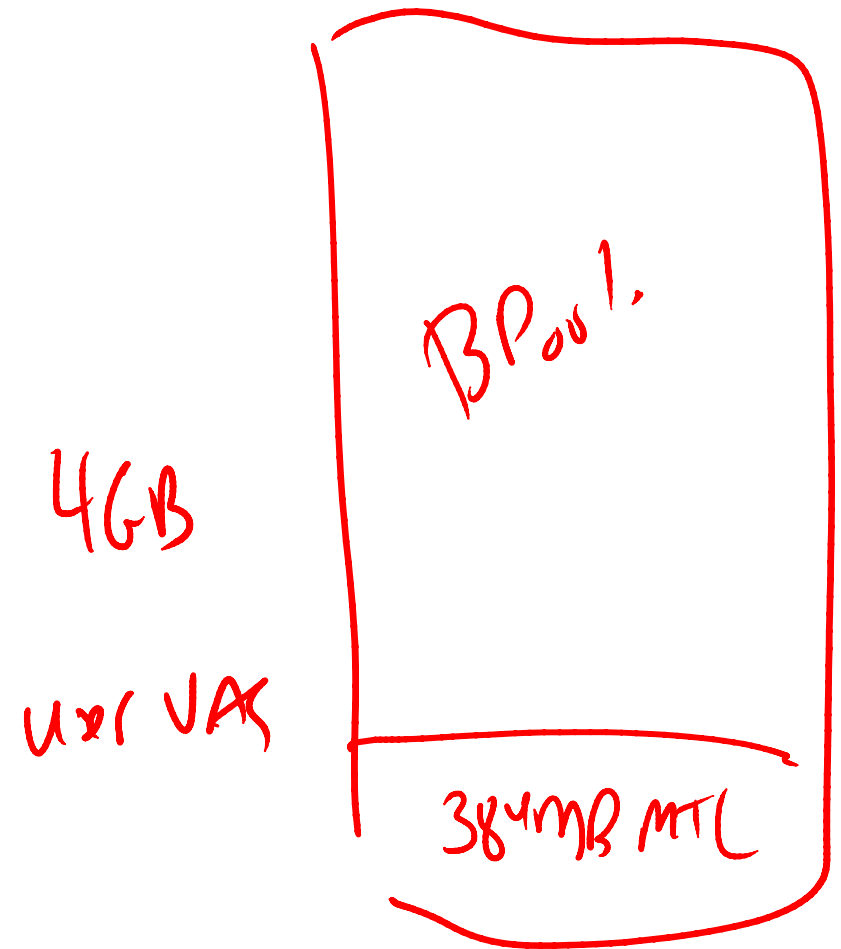
/3gb



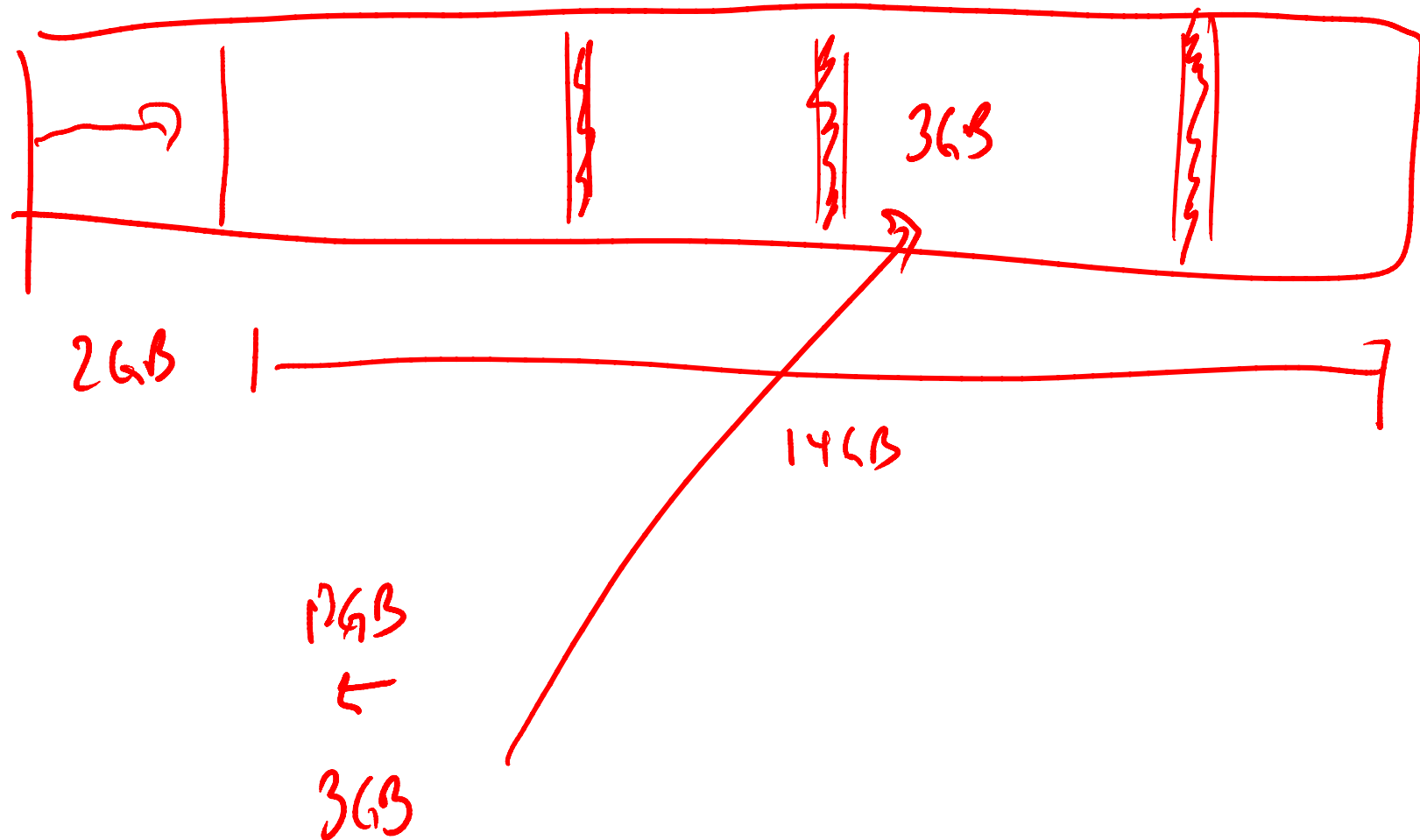
16GB

The /3GB switch in 32-bit Windows changes the user mode VAS and kernel mode VAS split from 2GB/2GB to 3GB/1GB giving more space to user mode applications to run but it limits AWE memory to 16GB or less due to lower page table entries (PTEs) in the kernel

Wow 64



Under WoW64 the user mode VAS is 4GB in size since the kernel in Windows is managed by 64-bit sizing, so the entire VAS for a 32-bit process can be allocated to user mode.



If SQL Server is configured for Large Pages, the memory allocation for the buffer pool occurs at instance startup and must be contiguous. If there is fragmentation in the upper memory regions the instance will have to perform memory size backoffs to try and get the largest memory region available, and this can affect instance startup time.

<http://blogs.msdn.com/b/psssql/archive/2009/06/05/sql-server-and-large-pages-explained.aspx>