

**penguinpunk.net**  
**clariion create storage pool**  
**revision 0.1**

### **synopsis**

The following is a simple document with screenshots providing step-by-step instructions for creating a storage pool on a CLARiiON CX4 running FLARE 30 / Unisphere.

**table of figures**

Figure 1 - Maximum Pool Sizes Per Model .....	3
Figure 2 - Maximum Pool Increases Per Model .....	3
Figure 3 - Pool Recommendations .....	3
Figure 4 – Storage – Pools / RAID Groups .....	4
Figure 5 – Pools.....	4
Figure 6 – Create Storage Pool.....	5
Figure 7 – Number of Disks.....	6
Figure 8 – Confirm – Create Storage Pool .....	6
Figure 9 – Creation Progress .....	7
Figure 10 – Error – Create Storage Pool.....	7
Figure 11 – Number of Disks.....	8
Figure 12 – Confirm – Create Storage Pool .....	8
Figure 13 – Creation Progress .....	9
Figure 14 – Create Storage Pool - Success .....	10
Figure 15 – Pool Capacity .....	10
Figure 16 - Pool Creation Progress .....	11
Figure 17 - Pool Creation Progress .....	12
Figure 18 - Pool Initializing .....	13
Figure 19 - Pool Capacity .....	13
Figure 20 - Expand Storage Pool .....	14
Figure 21 - Expand Storage Pool .....	15
Figure 22 - Expand Storage Pool - Success .....	15
Figure 23 - Storage Pool Expansion Progress .....	16
Figure 24 - Storage Pool Expansion Complete .....	16

**introduction**

EMC are positioning storage pools, rather than traditional RAID groups, as the future. About time. To celebrate, I've done a brief step-by-step that covers the process for creating storage pools with Unisphere. As always, I recommend you read the latest CLARiiON Best Practices for Performance and Availability (h5773-clariion-best-practices-performance-availability-wp.pdf) – available on Powerlink.

**considerations**

Before you launch into storage pool creation, there are a few things to consider beforehand. There are minimum and maximum numbers of drives that you can put in a storage pool. You'll realise soon enough that this number is the total number of drives in the CLARiiON minus the Vault drives. So this pool size will be dictated by the model of CLARiiON you're working with.

CLARiiON model	Minimum RAID 5 pool size (drives)	Maximum pool size (drives)	Maximum total drives in all pools (drives)
CX4-120	3	115	115
CX4-240	3	235	235
CX4-480	3	475	475
CX4-960	3	955	955

**Figure 1 - Maximum Pool Sizes Per Model**

There is also a limit on the size of the incremental pool increase per model. So you can't just go and create a 955-drive pool on your new CX4-960 in one go.

	Maximum pool drive incremental increases
CX4-120	40
CX4-240	80
CX4-480	120
CX4-960	180

**Figure 2 - Maximum Pool Increases Per Model**

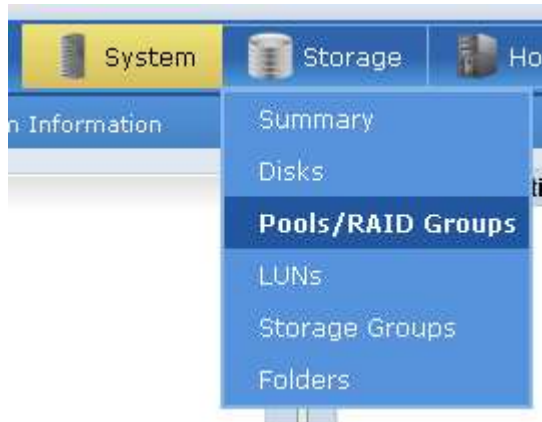
The following table lists a number of recommendations around pool sizes, particularly as they relate to RAID 5 and thin pools. Please also keep in mind that pools still have homogenous RAID types. That is, you cannot configure a pool that uses both RAID 5 and RAID 1/0.

CLARiiON model	Recommended initial RAID 5 pool size (drives)	Recommended incremental RAID 5 expansion (drives)	Recommended maximum RAID 5 pool size (drives)	Recommended thin storage pools per storage system (pools)
CX4-120	5	5	20	5
CX4-240	10	10	40	10
CX4-480	20	20	60	30
CX4-960	20	20	80	50

**Figure 3 - Pool Recommendations**

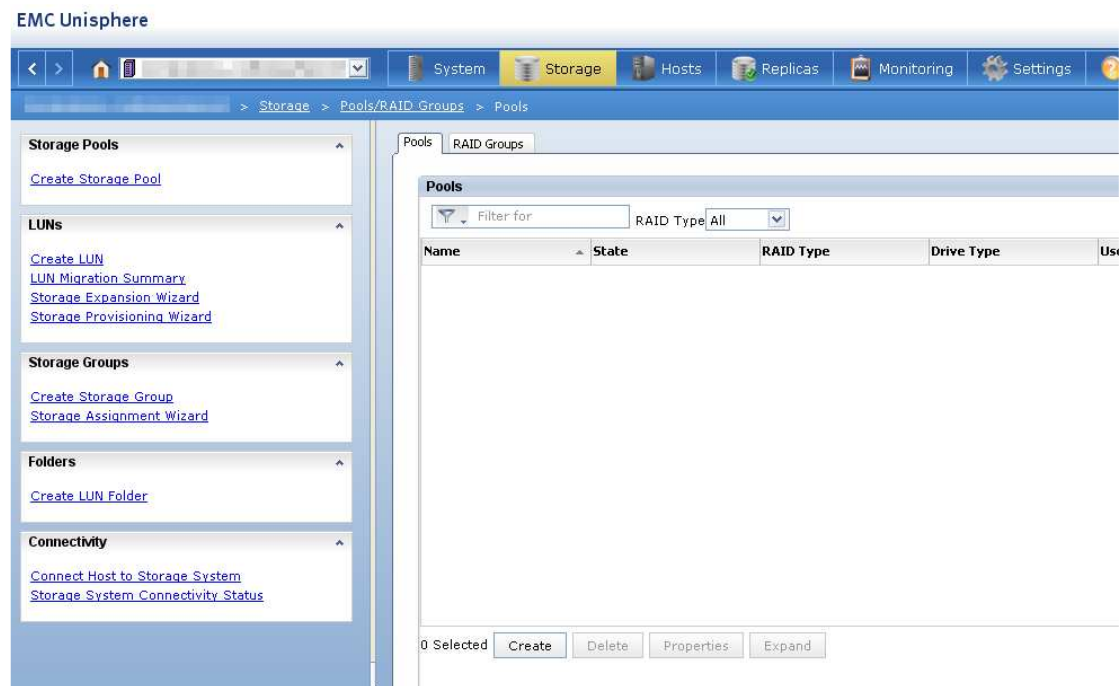
**process**

Let's get cracking then. In the Unisphere dashboard, select the array you wish to create the storage pool on by going to Storage – Pools / RAID Groups.



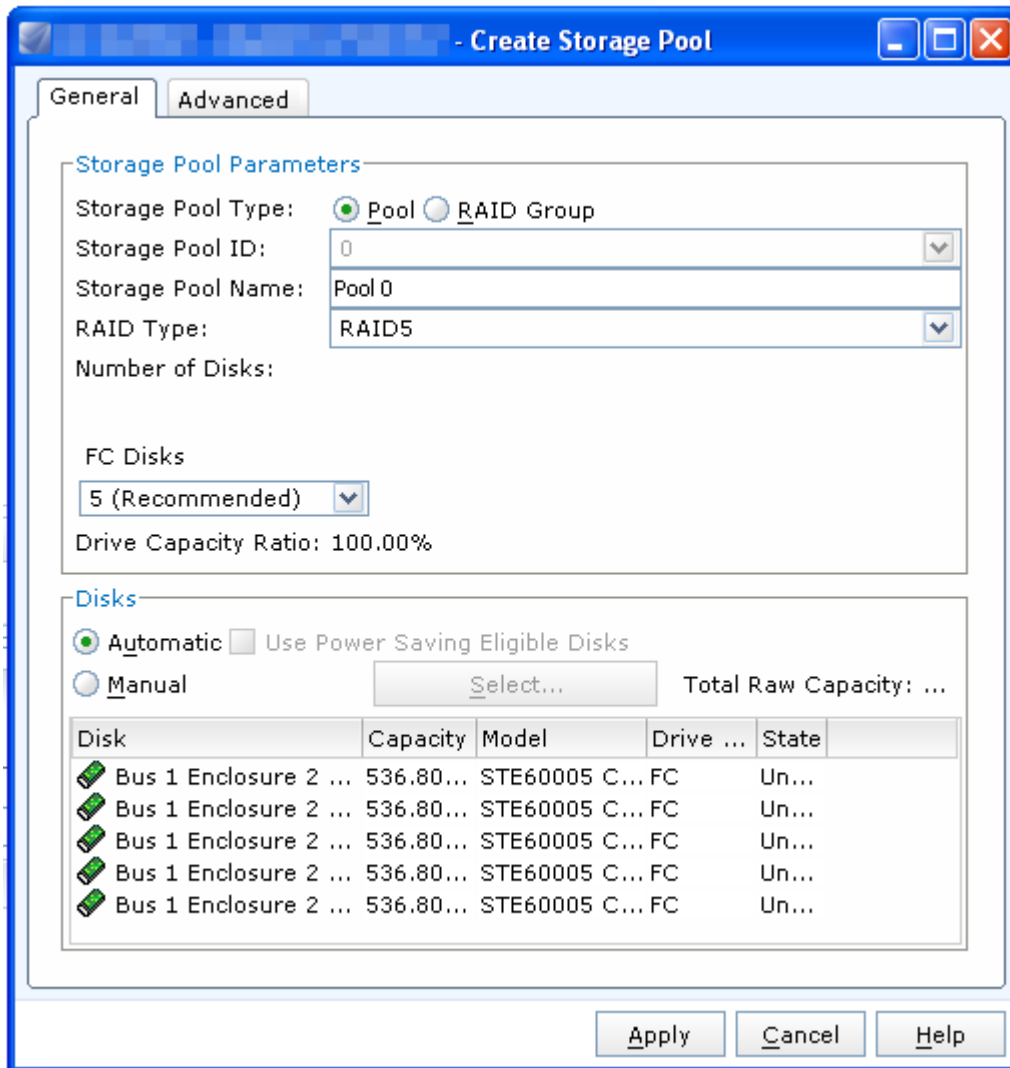
**Figure 4 – Storage – Pools / RAID Groups**

If you don't see anything listed under your pools tab, you probably haven't created a pool yet. Which makes sense, because you're reading a document about creating storage pools.



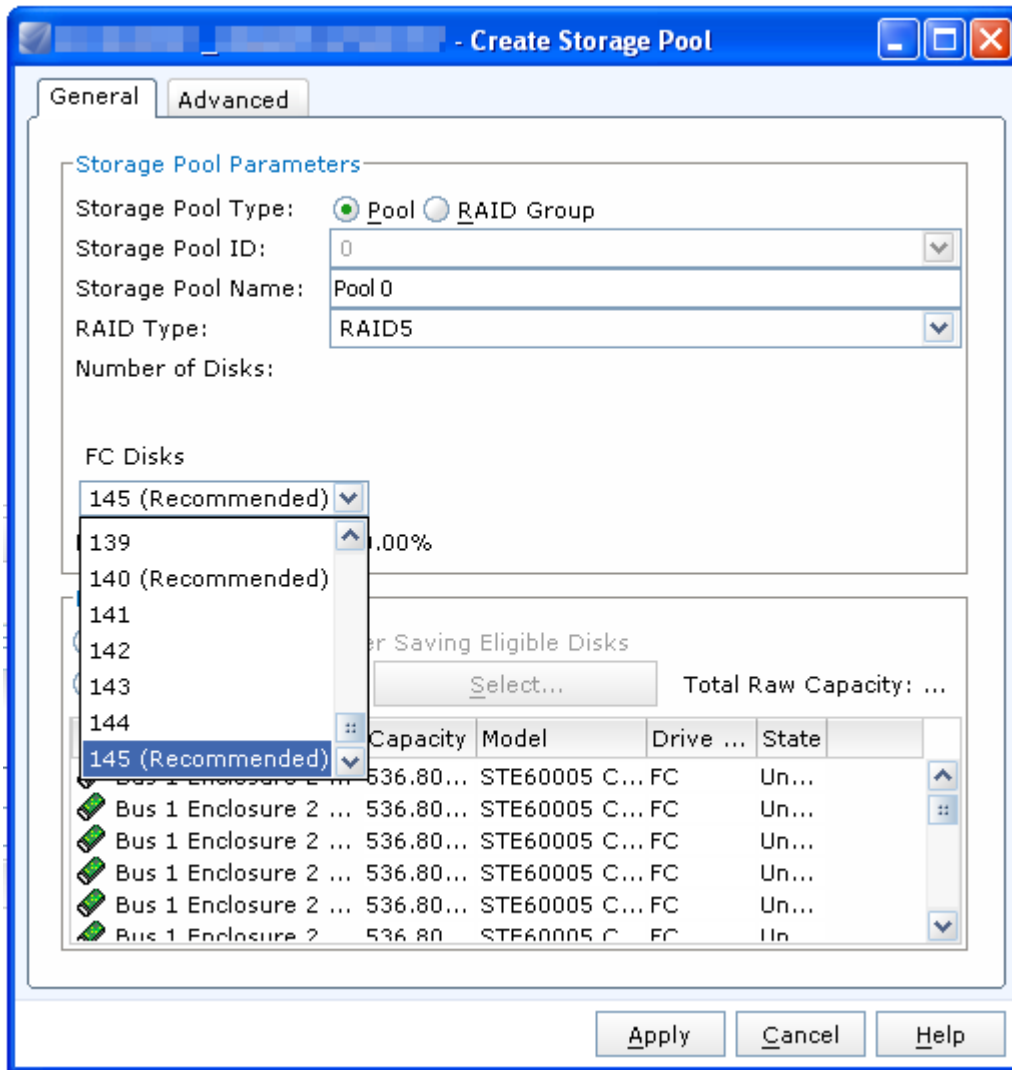
**Figure 5 – Pools**

Click on Create to create a new pool.



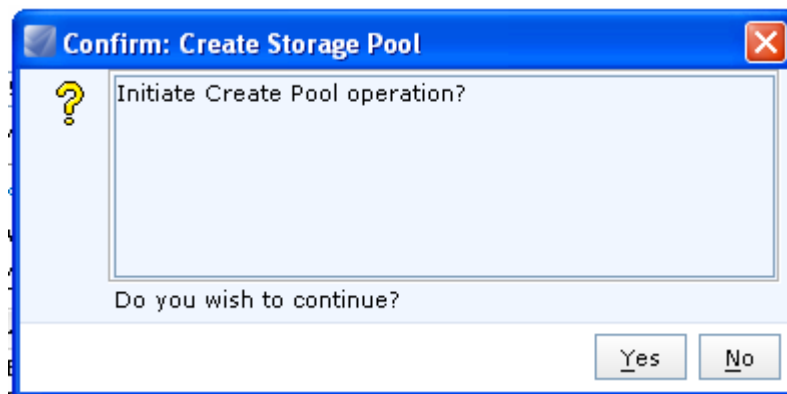
**Figure 6 – Create Storage Pool**

The default starting point for a RAID 5 pool is 5 disks. But we have 145 to play with on this array. Let's see how that goes.



**Figure 7 – Number of Disks**

Click on Apply to apply the changes to the pool. You'll also need to confirm the operation with Unisphere.



**Figure 8 – Confirm – Create Storage Pool**

The Creation Progress bar will now progress, if you will.

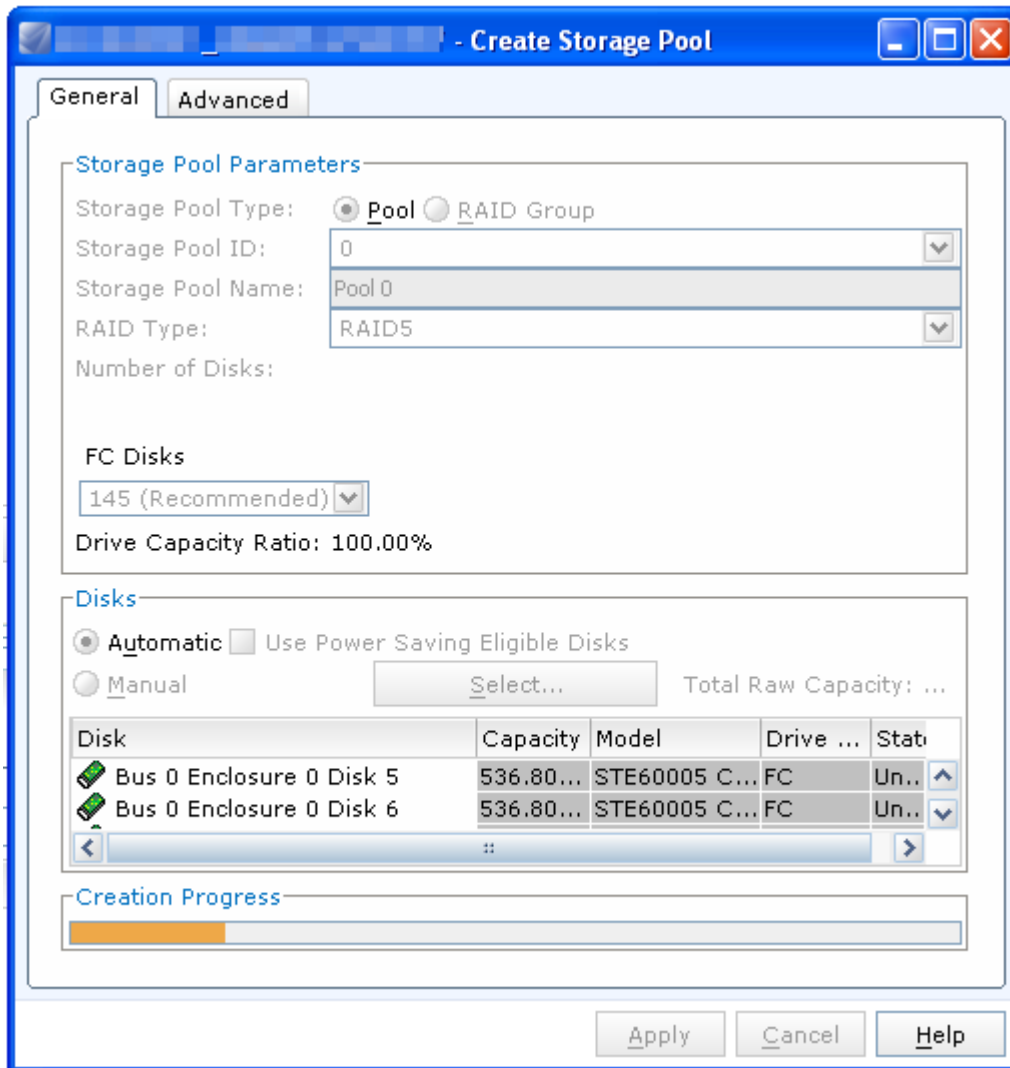


Figure 9 – Creation Progress

Gak! An error. But of course, because I already mentioned there were some limits on the number of spindles you can add to a pool.

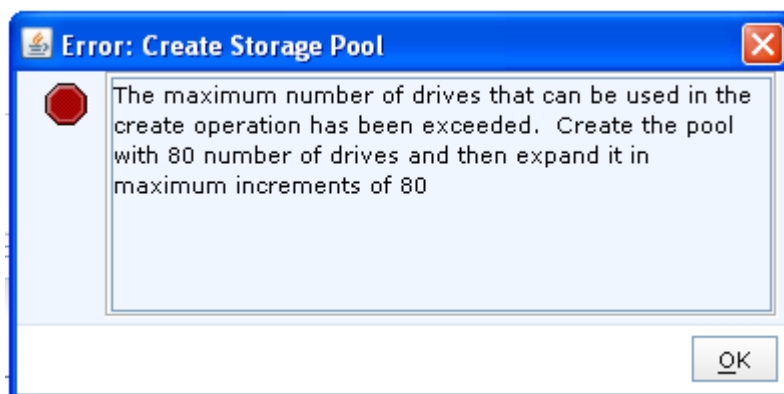


Figure 10 – Error – Create Storage Pool

An important thing to consider is that when you add increments to the pool, you should do the same number of disks each time, particularly if you already have LUNs bound on the pool. So if you start with 40 spindles, make it 40 spindles next time you expand, and so forth. But this is just a lab example, so I'm selecting 80, which is the maximum I can add in one go.

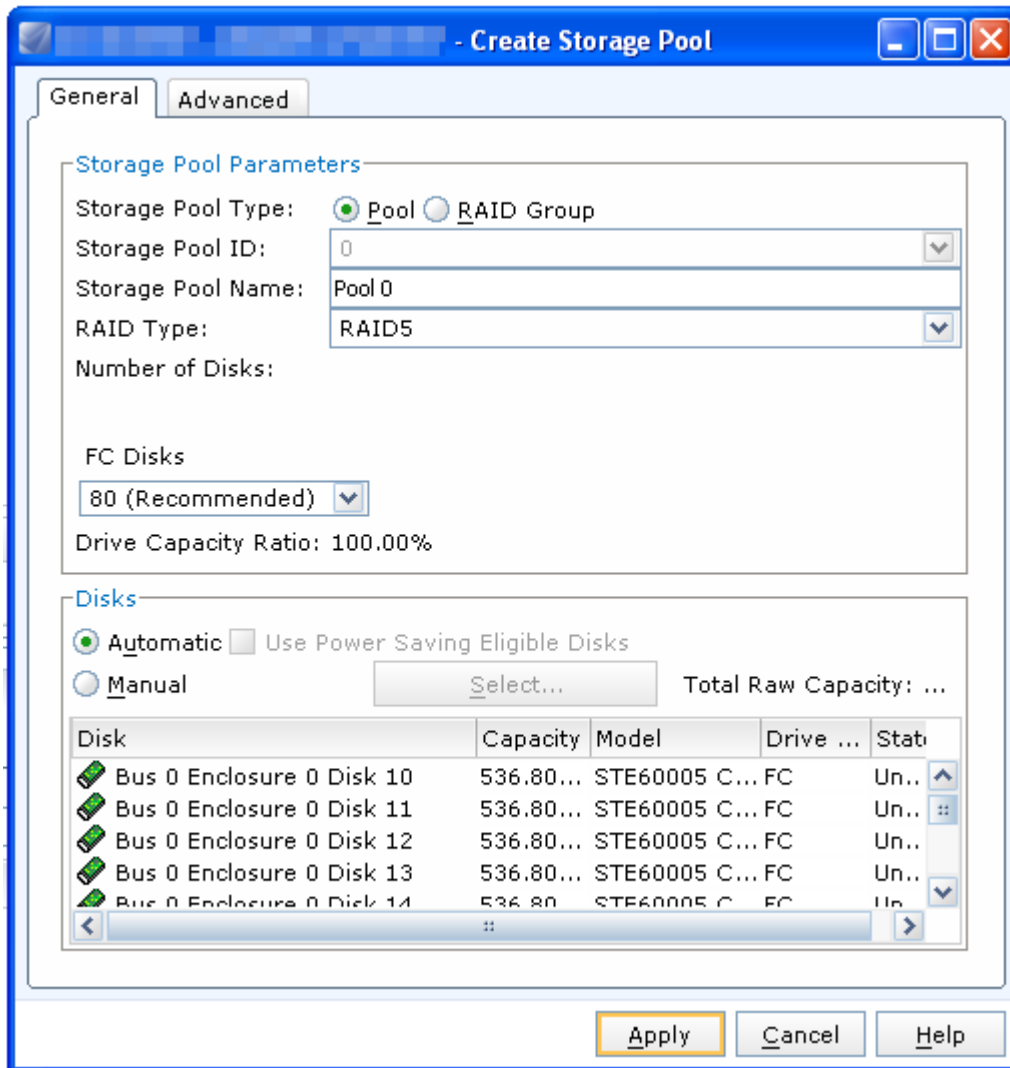


Figure 11 – Number of Disks

Confirm with Unisphere that you know what you're doing.

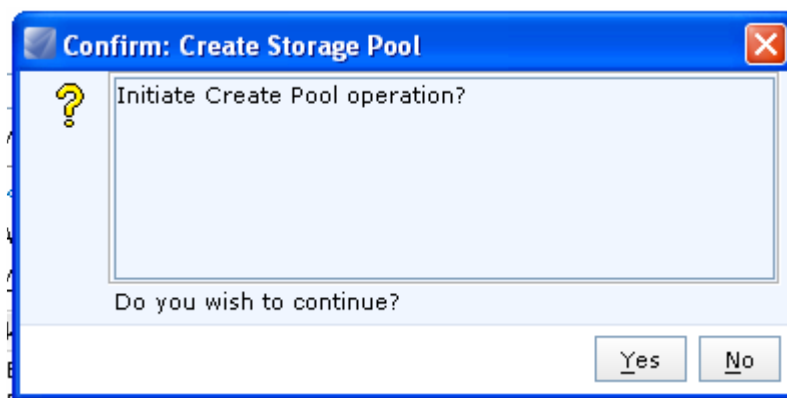
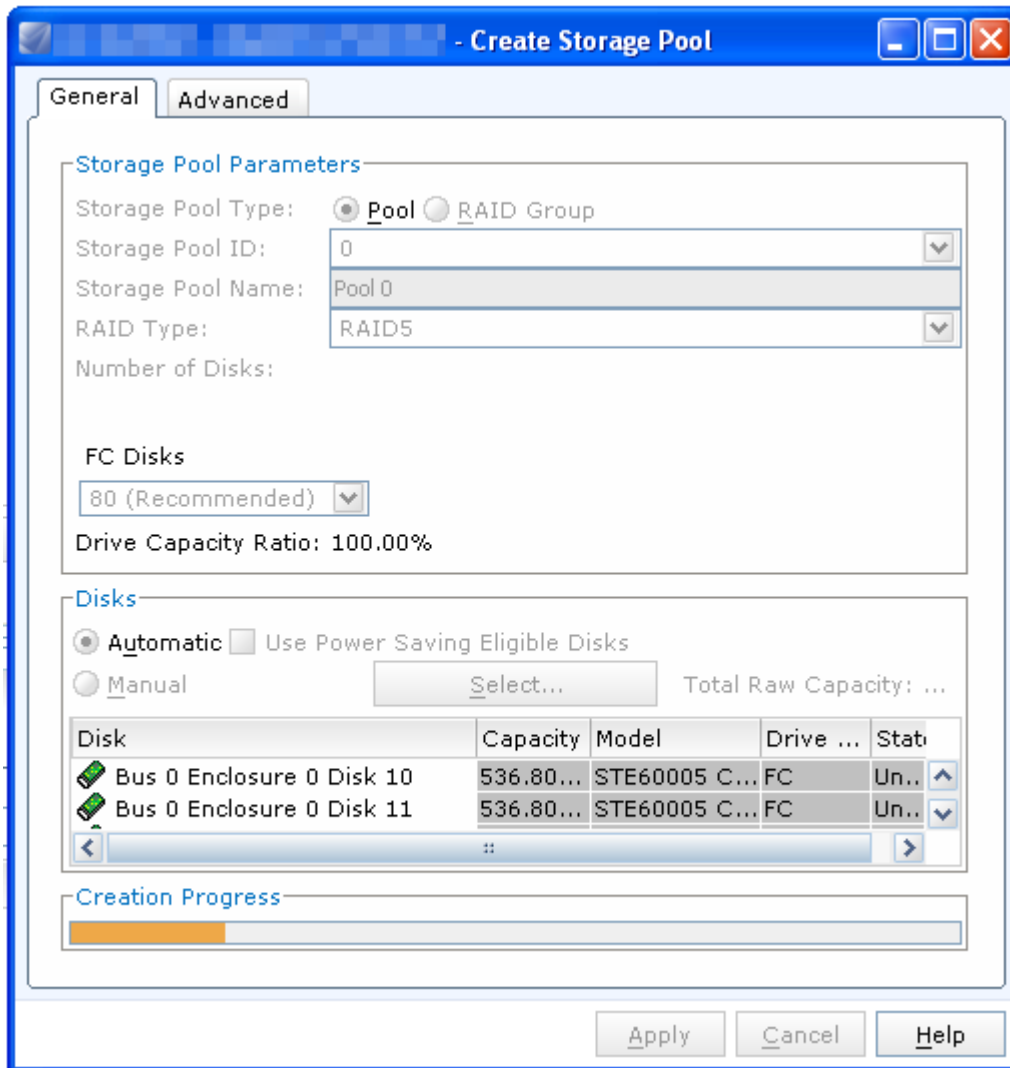


Figure 12 – Confirm – Create Storage Pool

Watch the little bar make progress.





**Figure 13 – Creation Progress**

You'll then be greeted with a message saying that the creation was initiated successfully.

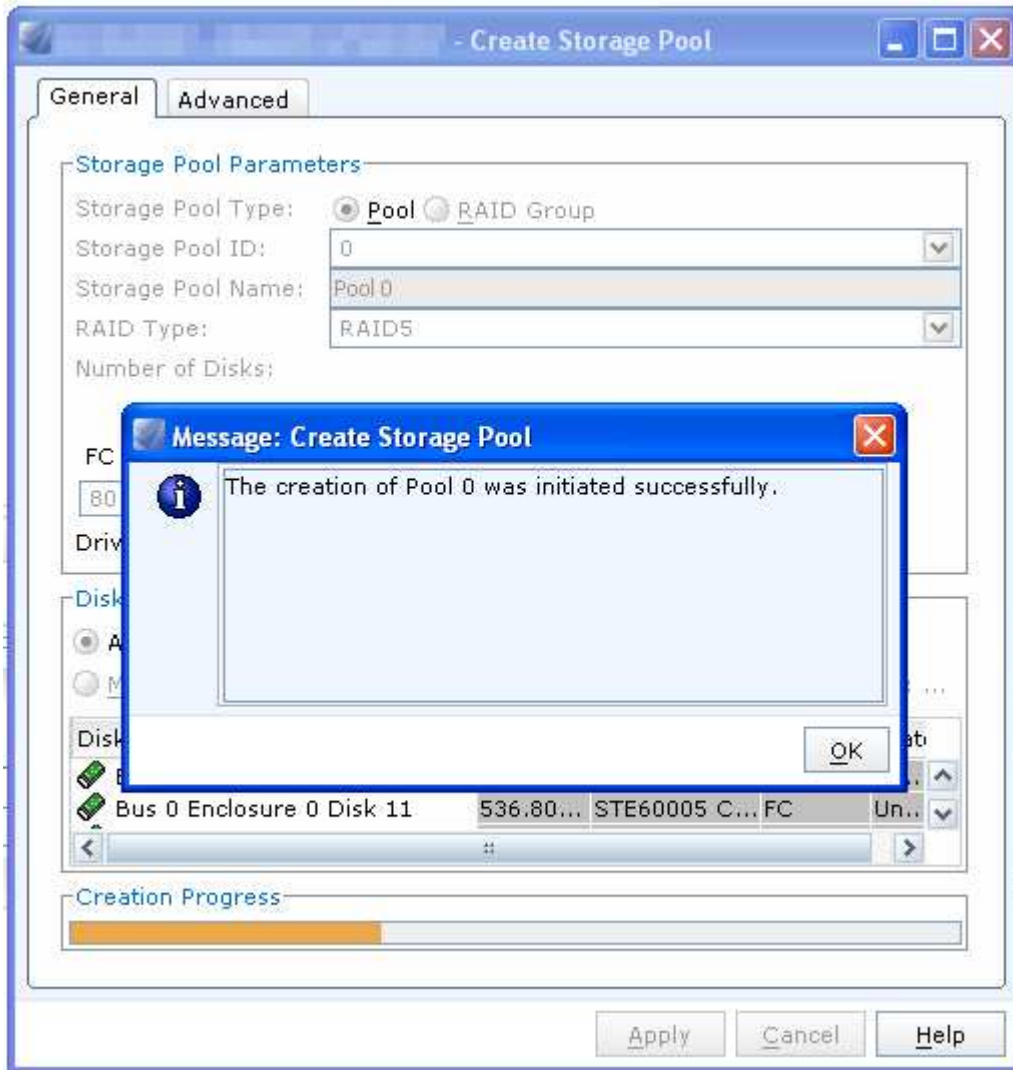


Figure 14 – Create Storage Pool - Success

So why does the pool capacity look so small?

Name	State	RAID Type	Drive Type	User Capacity (GB)	Free Capacity (GB)	Allocated (GB)	%Consumed	Subscribed (GB)	%Subscrib
Pool 0	Initializing	RAID5	FC	1519.547	1519.547	0.000	<div style="width: 0%; height: 10px; background-color: orange;"></div>		0

Figure 15 – Pool Capacity

Click on the Properties of the pool and you'll see that it's still creating / initializing the pool.

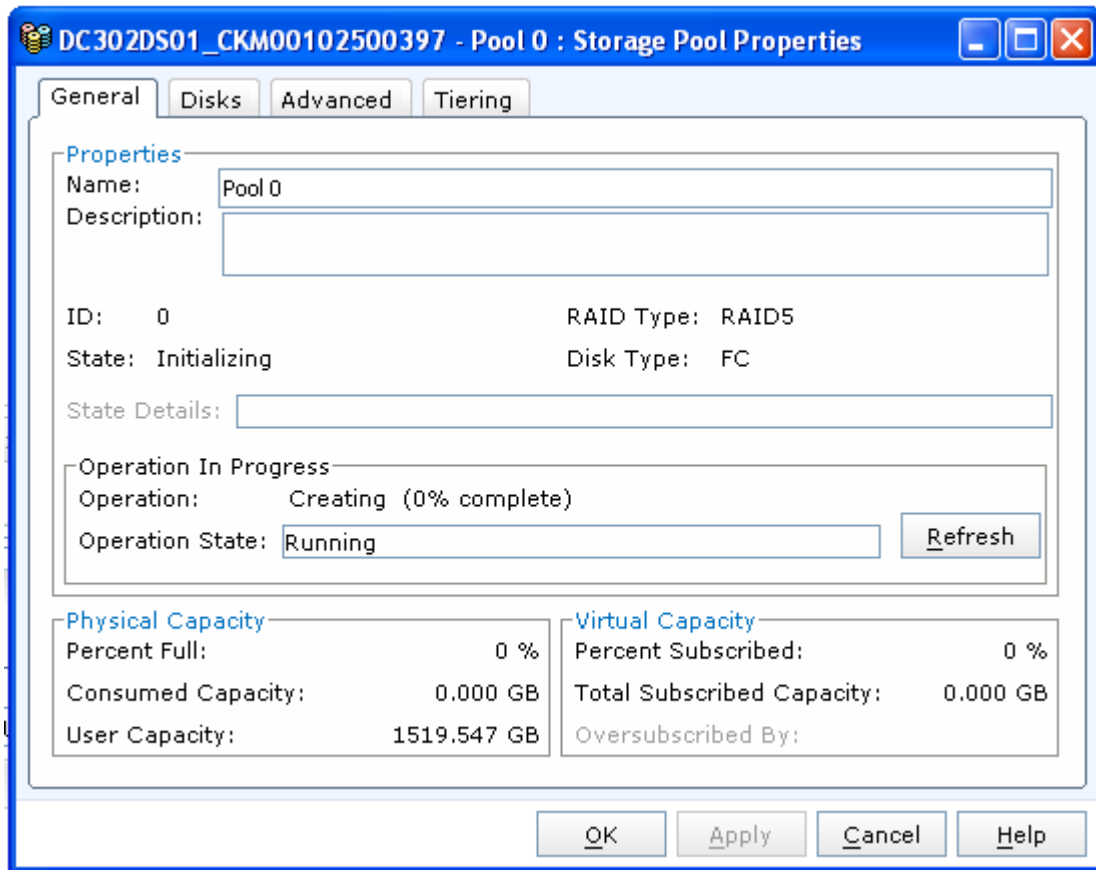
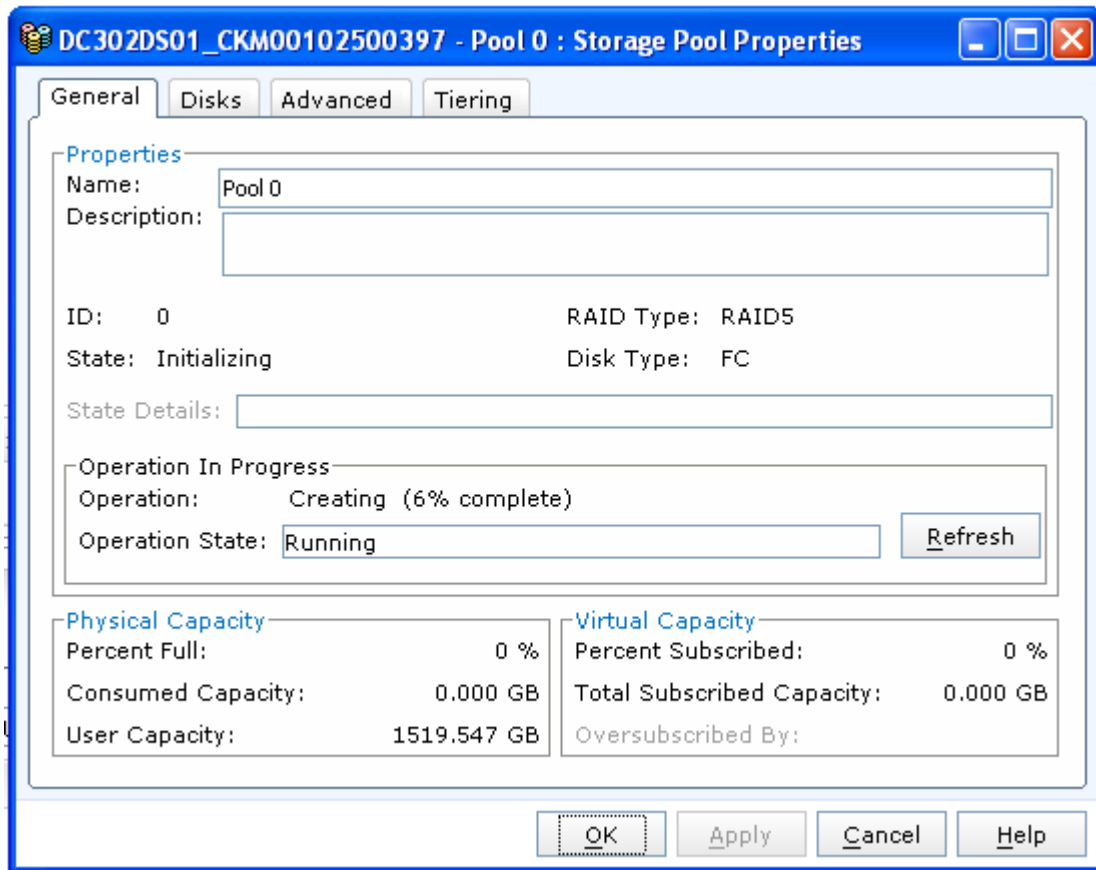


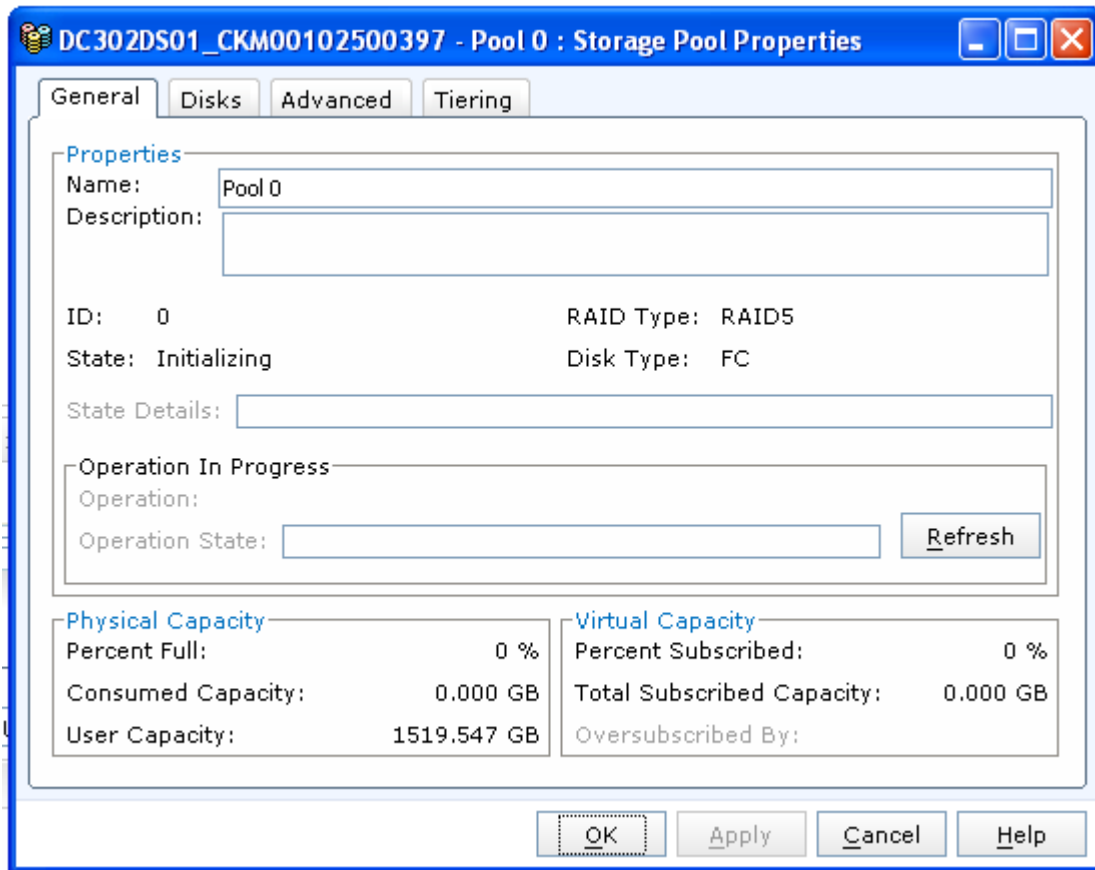
Figure 16 - Pool Creation Progress

Let's watch it some more.



**Figure 17 - Pool Creation Progress**

So now it's created, but the capacity is still not what you'd expect from 80 600GB FC spindles in RAID 5.



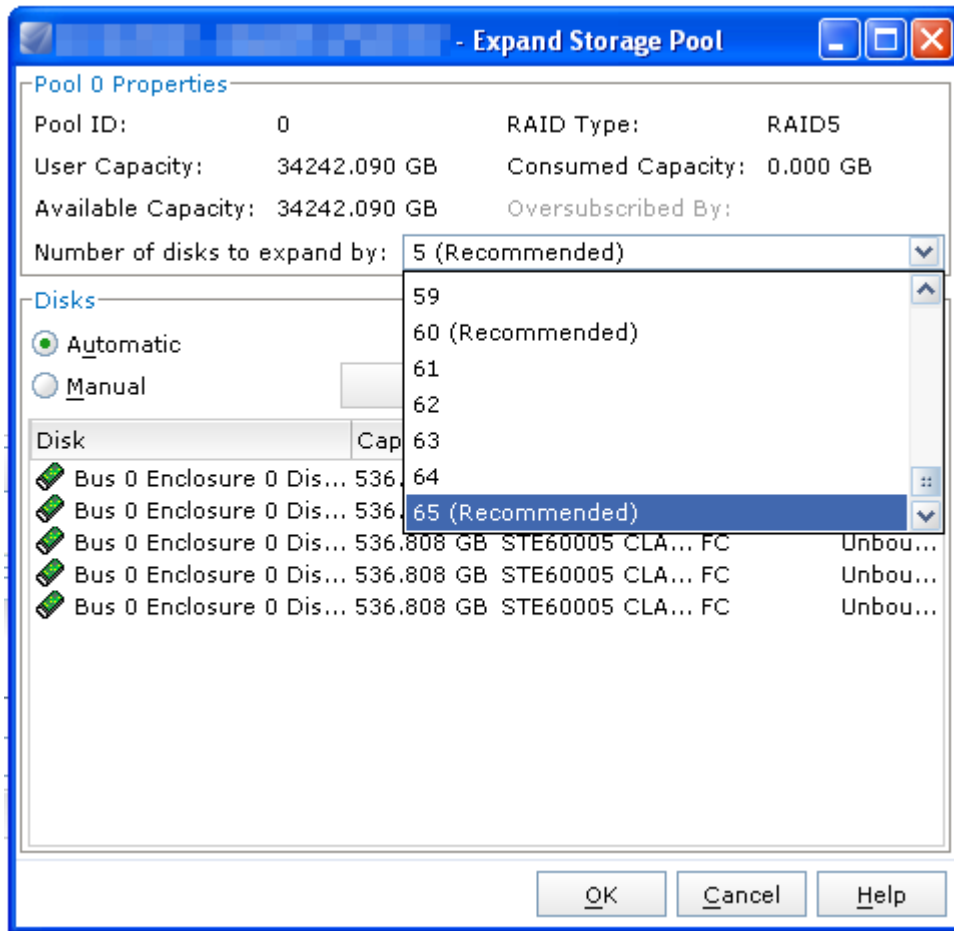
**Figure 18 - Pool Initializing**

Click on the little refresh icon on the right hand side and you'll see the capacity that you expect.

Name	State	RAID Type	Drive Type	User Capacity (GB)	Free Capacity (GB)	Allocated (GB)	%Consumed	Subscribed (GB)
Pool 0	Ready	RAID5	FC	34242.090	34242.090		0.000	

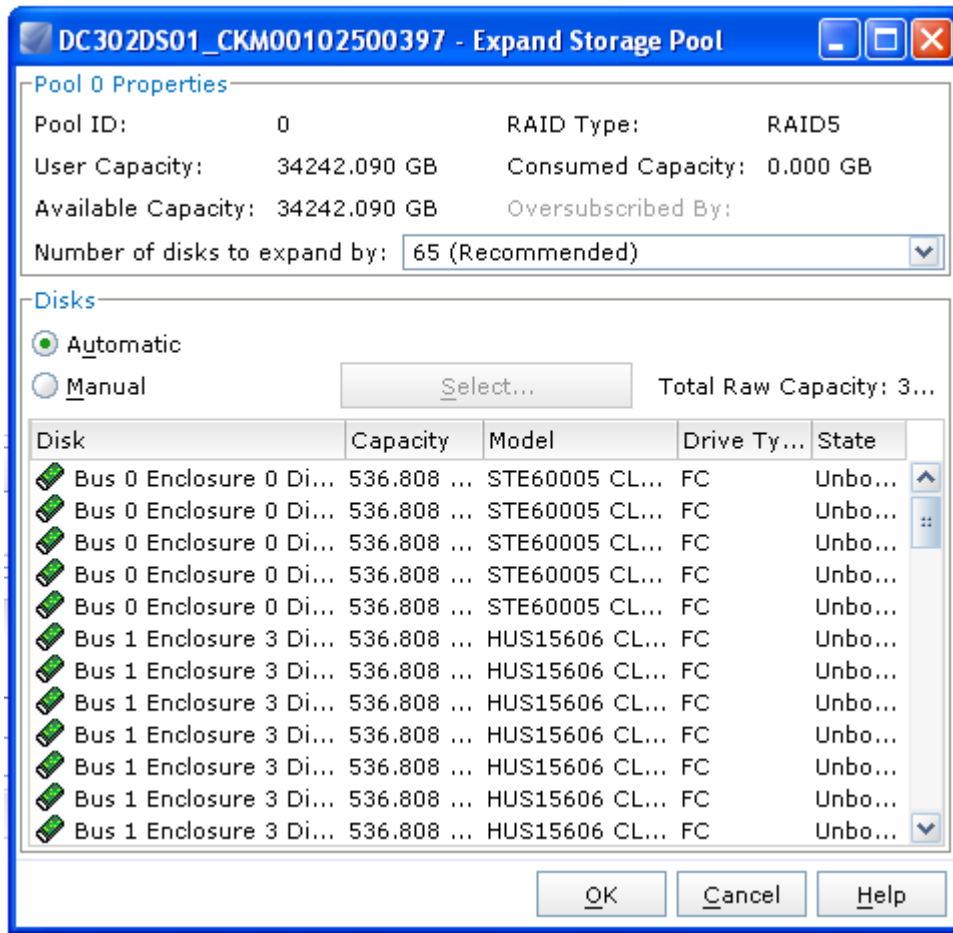
**Figure 19 - Pool Capacity**

Now click on Expand to expand the pool with the next lot of spindles. In this example, I have another 65 spindles to add to the pool.



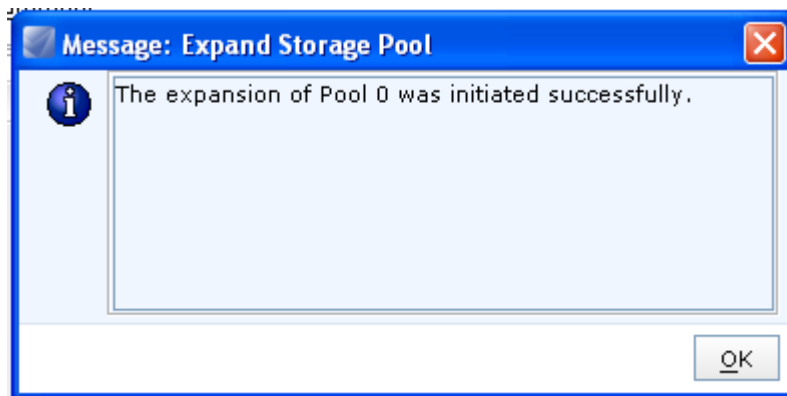
**Figure 20 - Expand Storage Pool**

Click on OK once you're sure you've got the disks you want in the list.



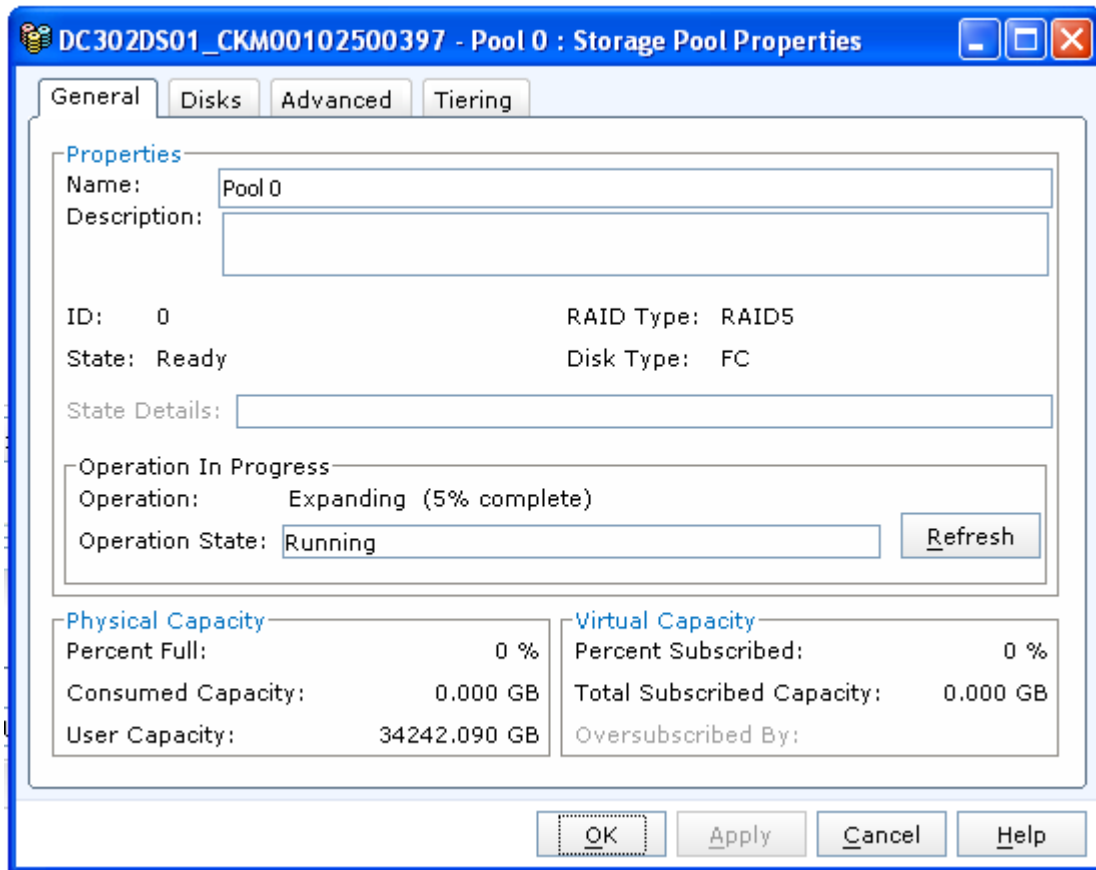
**Figure 21 - Expand Storage Pool**

Another Success message will pop up, because we all need reassurance that we've done the right thing at one time or another.



**Figure 22 - Expand Storage Pool - Success**

Now you'll see the Expanding operation running.



**Figure 23 - Storage Pool Expansion Progress**

Once the expansion is complete, refresh the view of the storage pool and you'll see the new capacity.

Name	State	RAID Type	Drive Type	User Capacity (GB)	Free Capacity (GB)	Allocated (GB)	%Consumed	Subscribed (GB)	%Subscribed
Pool 0	Ready	RAID5	FC	62063.788	62063.788	0.000		0	0

**Figure 24 - Storage Pool Expansion Complete**

And that's about it. Again, I recommend you read and re-read the latest FLARE 30 whitepaper on performance before you introduce storage pools into your environment. And talk to EMC or their local partners, that's what they're there for.