Physics Analysis and Simulation Scenarios

Goal: 12,000 Cores in the Farm by March 2015

Assumptions:

1 Moore's Law mostly holds, but assume it runs a bit slower each year (conservative)
2 Compute nodes have lifetime of 5 years, so 75% of the 2011 farm ages out

Scenario 1: Exponential growth in computing power (buy late)

Year	$/core	#cores added	retired	cost $K	capacity #cores
2011		256			1020
2012	$184	512	32	$94	1500
2013	$120	1700	200	$204	3000
2014	$80	3240	240	$259	6000
2015	$60	6280	280	$377	12000
				$934	

Scenario 2: Low expenditures in FY12, constant dollars FY13-15

Year	$/core	#cores added	retired	cost $K	capacity #cores
2011		256			1020
2012	$184	512	32	$94	1500
2013	$120	2492	200	$299	3792
2014	$80	3740	240	$299	7292
2015	$60	4988	280	$299	12000
				$992	

Scenario 2: $200K in FY12, Constant Dollars FY13-15

Year	$/core	#cores added	retired	cost $K	capacity #cores
2011		256			1020
2012	$184	1024	32	$200	2012
2013	$120	2376	200	$285	4188
2014	$80	3572	240	$286	7520
2015	$60	4760	280	$286	12000
				$1,056	

Notes:

1 the above costs are only the computing costs, not storage (disk, tape).
2 all of these procurements are ops, not capital (<$500K)
3 these numbers can be easily scaled up/down
4 in FY14 this farm would exceed 1/2 the size of LQCD
5 in FY15 LQCD would probably deploy a system >4x larger than the whole farm