

# ASCR Computing Upgrades At a Glance

System attributes	NERSC Now	OLCF Now	ALCF Now		NERSC Upgrade	OLCF Upgrade	ALCF Upgrades
Name Planned Installation	<b>Edison</b>	<b>TITAN</b>	<b>MIRA</b>	<b>Theta 2016</b>	<b>Cori 2016</b>	<b>Summit 2017-2018</b>	<b>Aurora 2018-2019</b>
System peak (PF)	2.6	27	10	>8.5	> 30	200	180
Peak Power (MW)	2	9	4.8	1.7	< 3.7	13.3	13
Total system memory	357 TB	710TB	768TB	>480 TB DDR4 + High Bandwidth Memory (HBM)	~1 PB DDR4 + High Bandwidth Memory (HBM)+1.5PB persistent memory	> 2.4 PB DDR4 + HBM + 3.7 PB persistent memory	> 7 PB High Bandwidth On- Package Memory Local Memory and Persistent Memory
Node performance (TF)	0.460	1.452	0.204	> 3	> 3	> 40	> 17 times Mira
Node processors	Intel Ivy Bridge	AMD Opteron Nvidia Kepler	64-bit PowerP C A2	Intel Knights Landing Xeon Phi many core CPUs	Intel Knights Landing many core CPUs Intel Haswell CPU in data partition	Multiple IBM Power9 CPUs & multiple Nvidia Voltas GPUS	Knights Hill Xeon Phi many core CPUs
System size (nodes)	5,600 nodes	18,688 nodes	49,152	>2,500 nodes	9,300 nodes 1,900 nodes in data partition	~4,600 nodes	>50,000 nodes
System Interconnect	Aries	Gemini	5D Torus	Aries	Aries	Dual Rail EDR-IB	2 <sup>nd</sup> Generation Intel Omni-Path Architecture
File System	7.6 PB 168 GB/s, Lustre®	32 PB 1 TB/s, Lustre®	26 PB 300 GB/s GPFS™	10PB, 210 GB/s Lustre initial	28 PB 744 GB/s Lustre®	120 PB 1 TB/s GPFS™	150 PB 1 TB/s Lustre®