LC Systems Update

LC User Meeting

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Agenda

- New Systems
- Systems Retiring
- HPC System Summary

Pascal (CTS-1)

Pascal Systems Highlights

- **Pascal Environment**
  - 163 GPU compute nodes. 1 mgmt, 1 login, 2 GW, 4 router
- Compute Node contains:
  - Dual socket Intel E5-2695 v4 CPUs (Broadwell) , 18 cores @ 2.1GHz per socket (CTS1 CPUs)
  - 256GB memory
  - 2 x Nvidia Tesla P100 16GB GPUs
- Interconnect -- Mellanox EDR

CTS Systems Highlights

- Compute Nodes
  - Dual Socket Intel E5-2695 v4 (Broadwell)
  - 18 cores @ 2.1GHz per socket (36 cores/node)
  - 128GB DDR4 @ 2.4GHz DRAM
- Intel Omni-Path 100GB/s interconnect
- 1SU = 192 total nodes, 232 TF/s, 23.5TB DRAM
  - 1 Management node
  - 1 Login node
  - 4 Network router/gateway nodes
  - 186 Compute nodes

CTS Systems

Name	Size	Network
Borax	48 nodes (serial)	CZ
Quartz	14 SU	CZ
Pascal	~1 SU	CZ
RZTopaz	4 SU	RZ
RZTrona	20 nodes (serial)	RZ
Jade	14 SU	SCF
Mica	2 SU	SCF
Agate	48 nodes (serial)	SCF

Systems Retiring

Retiring Systems	Retirement Date	Replacement System
Vulcan	11/1/2018 (or +1 month)	uSierra RZSierra
Surface (repurpose and update to TOSS 3)	3/15/2018	Pascal

HPC at LLNL – As of Feb 2018

System	Top500 Rank	Program	Manufacture/ Model	Processor Architecture	OS	Inter-connect	Nodes	Cores	Memory (GB)	Peak TFLOP/s
OCF										
Vulcan	25	ASC+M&IC+HPCIC	IBM BGQ	IBM PowerPC A2	RHEL/CNK	5D Torus	24,576	393,216	393,216	5,033.2
Cab (TLCC2)		ASC+M&IC+HPCIC	Appro	Intel Xeon E5-2670	TOSS	IB QDR	1,296	20,736	41,472	426.0
Quartz (CTS-1)	49	ASC+M&IC	Penguin	Intel Xeon E5-2695 v4	TOSS3	Omni-Path	2,688	96,768	344,064	3251.4
Pascal		ASC+M&IC	Penguin	Intel Xeon E5-2695 v4	TOSS3	IB EDR	163	5,868	41,728	1700.0
RZTopaz		ASC	Penguin	Intel Xeon E5-2695 v4	TOSS3	Omni-Path	768	27,648	98,304	929.0
RZManta		ASC	IBM	IBM Power8+	RHEL	IB EDR	36	720	11,520	597.6
Ray		ASC+M&IC	IBM	IBM Power8+	RHEL	IB EDR	54	1,080	17,280	896.4
Catalyst		ASC+M&IC	Cray	Intel Xeon E5-2695 v2	TOSS3	IB QDR	324	7,776	41,472	149.3
Syrah		ASC+M&IC	Cray	Inetl Xeon E5-2670	TOSS	IB QDR	324	5,184	20,736	107.8
Surface		ASC+M&IC	Cray	Intel Xeon E5-2670	TOSS	IB FDR	162	2,592	41,500	451.9
Borax (CTS-1)		ASC+M&IC	Penguin	Intel Xeon E5-2695 v4	TOSS3	N/A	48	1,728	6,144	58.1
RZTrona (CTS-1)		ASC	Penguin	Intel Xeon E5-2695 v4	TOSS3	N/A	48	1,728	6,144	58.1
OCF Totals	Systems	12								13,658.8
SCF										
Pinot(TLCC2, SNSI)		M&IC	Appro	Intel Xeon E5-2670	TOSS	IB QDR	162	2,592	10,368	53.9
Sequoia	6	ASC	IBM BGQ	IBM PowerPC A2	RHEL/CNK	5D Torus	98,304	1,572,864	1,572,864	20132.7
Zin (TLCC2)	316	ASC	Appro	Intel Xeon E5-2670	TOSS	IB QDR	2,916	46,656	93,312	961.1
Jade+Jadeita (CTS-1)	50	ASC	Penguin	Intel Xeon E5-2695 v4	TOSS	Omni-Path	2,688	96,768	344,064	3251.4
Mica		ASC	Penguin	Intel Xeon E5-2695 v4	TOSS	Omni-Path	384	13,824	49,152	464.5
Shark		ASC	IBM	IBM Power8+	RHEL	IB EDR	36	720	11,520	597.6
Max		ASC	Appro	Intel Xeon E5-2670	TOSS	IB FDR	324	5,184	82,944	107.8
Agate (CTS-1)		ASC	Penguin	Intel Xeon E5-2695 v4	TOSS	N/A	48	1,728	6,144	58.1
SCF Totals	Systems	8								25,627.1
Combined Totals		20								39,285.9

Questions?

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