

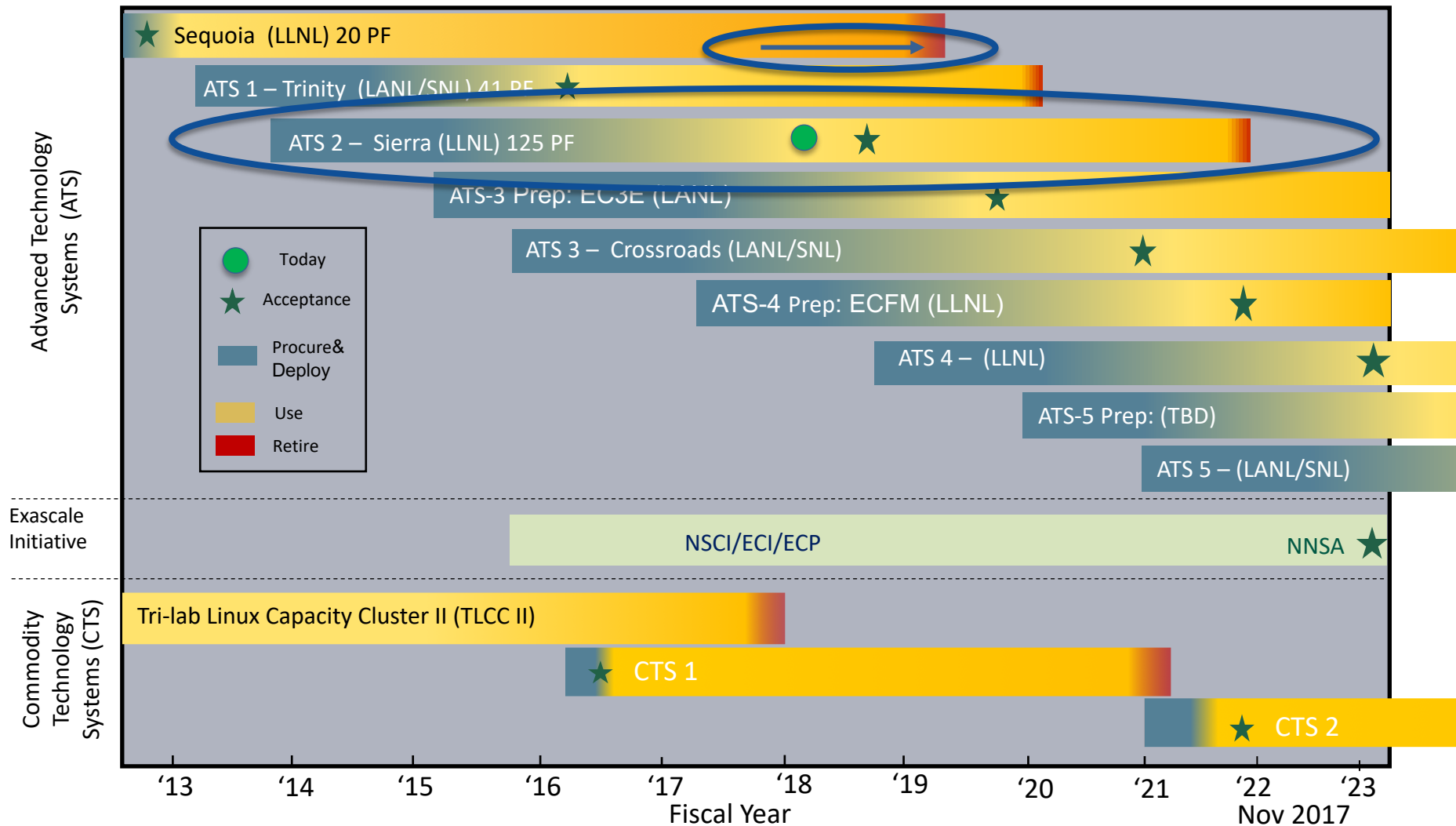
Sierra ATS Update

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Sierra will be the next ASC ATS platform



The Sierra system that will replace Sequoia features a GPU-accelerated architecture



Compute Node

2 IBM POWER9 CPUs
4 NVIDIA Volta GPUs
NVMe-compatible PCIe 1.6 TB SSD
256 GiB DDR4
16 GiB Globally addressable HBM2
associated with each GPU
Coherent Shared Memory

Compute Rack

Standard 19"
Warm water cooling

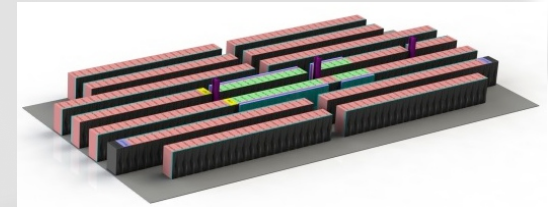
Compute System

4320 nodes
1.29 PB Memory
240 Compute Racks
125 PFLOPS
~12 MW

Components

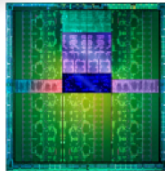
IBM POWER9

- Gen2 NVLink



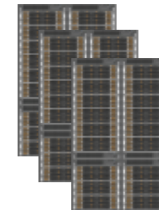
NVIDIA Volta

- 7 TFlop/s
- HBM2
- Gen2 NVLink



Mellanox Interconnect

Single Plane EDR InfiniBand
2 to 1 Tapered Fat Tree



Spectrum Scale File System

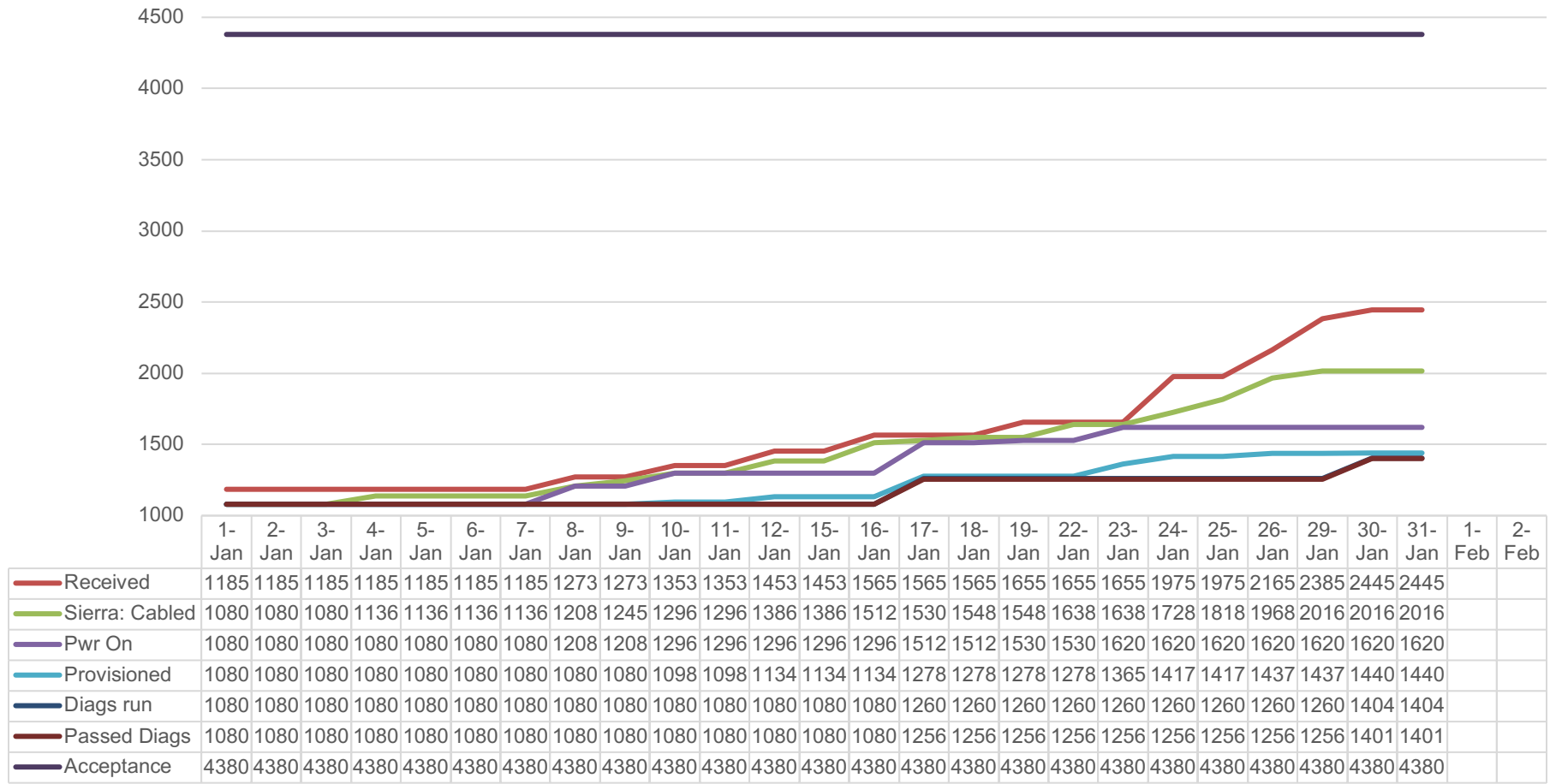
154 PB usable storage
1.54 TB/s R/W bandwidth

Sierra system architecture details



	Sierra	uSierra	rzSierra
Nodes	4,320	684	54
POWER9 processors per node	2	2	2
GV100 (Volta) GPUs per node	4	4	4
Node Peak (TFLOP/s)	29.1	29.1	29.1
System Peak (PFLOP/s)	125	19.9	1.57
Node Memory (GiB)	320(256+64)	320(256+64)	320(256+64)
System Memory (PiB)	1.29	0.209	0.017
Interconnect	2x IB EDR	2x IB EDR	2x IB EDR
Off-Node Aggregate b/w (GB/s)	45.5	45.5	45.5
Compute racks	240	38	3
Network and Infrastructure racks	13	4	0.5
Storage Racks	24	4	0.5
Total racks	277	46	4
Peak Power (MW)	~12	~1.8	~0.14

Remaining 75% of Sierra installation proceeding in 2018



Sierra will begin friendly user access this month

- LSF/CSM scheduler and resource manager on Test and Development rack this week
- LSF/CSM ready for Sierra next week
- First users mid to late February
- Last nodes to be received late March / early April
- Version 1.0 software mid April
- Acceptance 3Q CY2018
- Science runs 4Q 2018
- SCF 1Q CY2019

