Low Cost Solutions for Research Computing Hardware

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The Trestles Cluster

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University of Arkansas Acquires SDSC's Trestles Supercomputer

'High-Productivity Workhorse' Lives on as SDSC Readies Comet Cluster

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SDSC's 'Trestles' supercomputer *Image: Ben Tolo, SDSC.*

The National Science Foundation and the San Diego Supercomputer Center (SDSC) at the University of California, San Diego, have agreed to transfer ownership of its *Trestles* supercomputer cluster to the Arkansas High Performance Computing Center.

Once installed, the supercomputer will more than double the Arkansas High Performance Computing Center's computational capacity and allow it to run three times the amount of jobs for campus researchers, according to David Chaffin and Jeff Pummill, interim co-directors of the center. The University of Arkansas announcement can be read here.

"We are thrilled to acquire a prominent national resource for high-performance computing," said Pummill. "Researchers at the University of Arkansas are in a perpetual state of evolution and advancement in their computational needs, and *Trestles* is known throughout the national high-performance computing community as a 'high-productivity workhorse.'"

"High-performance computing (HPC) plays a pivotal role in supporting vital research at the University of Arkansas," said Jim Rankin, vice provost for research and economic development at the university. "The addition of *Trestles* enhances our goal of becoming one of the top 50 public research universities in the United States."

Added Richard Moore, SDSC's deputy director and the principal investigator for *Trestles*: "During its four-year

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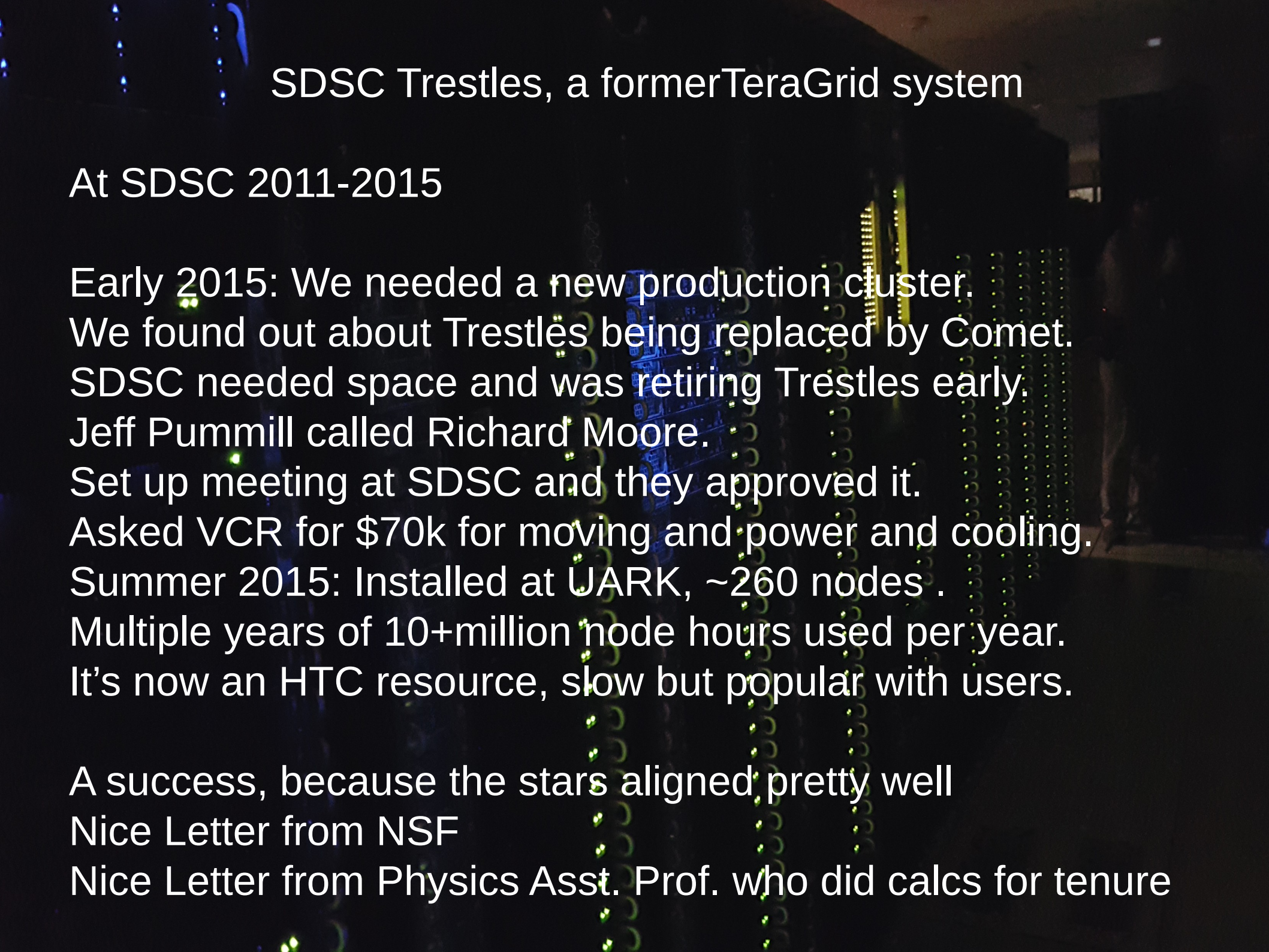

SDSC Trestles, a formerTeraGrid system

At SDSC 2011-2015

Early 2015: We needed a new production cluster.
We found out about Trestles being replaced by Comet.
SDSC needed space and was retiring Trestles early.
Jeff Pummill called Richard Moore.
Set up meeting at SDSC and they approved it.
Asked VCR for $70k for moving and power and cooling.
Summer 2015: Installed at UARK, ~260 nodes .
Multiple years of 10+million node hours used per year.
It’s now an HTC resource, slow but popular with users.

A success, because the stars aligned pretty well
Nice Letter from NSF
Nice Letter from Physics Asst. Prof. who did calcs for tenure

Equipment experiences

We had only one SPOF, a Voltaire switch which we put under warranty for a couple of years. Still kicking.

Trestles was a bit underspecified for power and would trip PDUs if a whole half rack of HPL or MD started.

Rack ethernet switches all died and we replaced with surplus from IT Networking.

We let nodes die and cannibalized, now down to about 160 nodes. Have lost a lot of power supplies.
Plus: we’re not tripping PDUs now.

Trestles is not power efficient vs. new computers.

Factors for success: repurposing a cluster

Luck: called first
Speed: called first
Luck: it wasn’t worn out because of Comet incoming

Some factors we found necessary

- Experience to install a cluster from scratch and maintain machines out of warranty
- A place and power and cooling for multiple racks
- Ability to get facilities ready quickly
- A moderate amount of funding quickly for moving and startup