

Reflections on UC Research Computing

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Questions

- What will the UC Grid look like in 2 years?
- In 5 years?
- What about Condor style or pooled/condo models?
- What phasing of new capability makes sense?
What assumptions?
- What operational capability is required to support the Grid as it evolves?
- What are the usability and user support issues?

Observations

- Technology trends grow exponentially
- Limited population of high-end users
- The largest population of need grows less than technology
- Most infrastructures are underutilized
- Infrastructure is likely to be heterogenous
- If we build it they will come, eventually

My “desktop” needs over past 10 years

	1996	2006	%	Doubling time, mo.
CPU speed, MHz	50	3000	51	20
Storage, MB	50	100,000	113	11
Network bandwidth, Gb/sec	10	1,000	59	18

High-End Power Users

- Grand Challenge science problems
- Distributed vs. tightly coupled systems
- Auto-parallelized, check-pointed computations
- Custom programmed and open-source software
- Leverage synergies (i.e. funding, people, etc)
- Support needs at the high end are unique

Funding

- Needs to be predictable, reasonable, and equitable
- At UCI ~\$300M/yr extramural funding, plus other resources.
- Past 6 years growing at ~18% per year
- “Power of One” that is: a 1% solution => \$3M/yr and double that (\$6M) in 4 years