Server & Storage Acquisition Checklist

(Straw Man, V3)

This is a checklist of issues to be resolved and steps to be taken when planning the servers and/or storage for a scientific computing project. Rough estimates of typical time requirements are included where appropriate.

- Create a technical requirements document for the project (1 day - 1 week). This should include:
  - Overview:
    - Briefly explain the nature/size of the computing problem to be solved.
    - Identify the interested parties, i.e., the client department or project, Computing Division, and perhaps other SLAC departments or non-SLAC organizations.
    - List and prioritize any clear limiting constraints – budget, time, facilities, expertise, site (Bldg 50 or elsewhere), etc.
    - Desired "go-live" deployment date.
  - Compute Requirements:
    - Approximate compute capacity in generic units like SPECints or cores.
    - Job management: interactive, batch, mpi?
    - Approximate number of existing or new SLAC users.
  - Storage Requirements:
    - Approximate storage capacity.
    - Data access patterns, e.g., typical file sizes, write-once/read-many, how many simultaneous clients.
  - Network requirements:
    - 1Gb, 10Gb?
    - Low latency?
    - Dedicated switch?
  - Other hardware or software constraints (e.g., availability of interface cards or drivers for special hardware).
  - Required level of integration with existing services.
  - Access requirements, e.g., internet visibility, user authentication/authorization.
  - Availability or quality of service requirements (desired uptime, response time for problems).
  - Potential future growth.
  - Initial estimate of human resources needed to complete project.
- Inform appropriate line managers about the project and request assignment of resources.
- Review Computing Division standards and recommendations.
- (Optional) Technology evaluation. If desired, evaluate one or more systems as potential components of a solution (weeks).

- Design and document a proposed solution (1-2 weeks per iteration)
    - Overall architecture
    - Description of required equipment, in generic terms in case the acquisition must be competed.
    - Estimate computing infrastructure requirements; negotiate availability:
        - floor space
        - racks
        - power
        - cooling
        - network ports (primary and service networks)
        - special networking technologies
        - maximum cable lengths
        - accessibility (e.g., for off-site contractors)
        - serial console lines
        - UPS capacity
    - Support Requirements
        - basic outline of the SLA
        - vendor support contracts - hardware + software warranties and support contracts, maintenance arrangements
        - expectations from Computing Division and from client
    - Security plan
- Purchase (1-many weeks depending on complexity and whether the purchase must be competed).
    - Prepare requisition package with a detailed list of equipment requirements, including warranties, hardware and software support contracts, maintenance arrangements and acceptance criteria.
    - If competitive bid, evaluate responses and select vendor.
    - Place order.
    - Receive and inspect equipment.
- Hardware Installation (1-2 weeks)
    - Equipment delivered to appropriate machine room.
    - Racking, power, network (including management network), serial, etc.
    - Should make some provisions for hardware coming in piecemeal.
- Operating System Installation (2-3 days)
    - - Initial install + taylor work
    - - OS-level Monitoring
    - - Enable appropriate access control.
- Testing (1-4 weeks)
    - "Lights On" testing - does all of the equipment work when first turned on?
    - "Burn-in" testing - does all of the equipment work when put under at least minor load?
    - Performance/corner case testing
    - Sign off on acceptance testing

    - Monitoring
- Put equipment into production (variable).
    - Choose a "Go-Live" date.
    - If replacing an existing system, prepare and implement a transition plan.
    - Enable appropriate user access.
- Documentation (1 week)
    - Archive previous documents.
    - Make new document with “as built” design plus useful data for day-to-day support.