Requirements for

SSC

Central Computing Staffing

(Conceptual)

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Summary/Abstract

Given a computation center with ~10,000 MIPS supporting ~1,000 users, what are the staffing requirements?

Introduction

The attempt in this note is to list the functions and staff size required in a central computing or centrally supported computing complex. The organization assumes that although considerable computing power would exist (mostly for online) in the four interaction regions (IR) that there are functions/capabilities better performed outside the IR and in this model at a "central computing facility." What follows is one staffing approach, not necessarily optimal, with certain assumptions about numbers of computer systems, media, networks and system controls, that is, we would get the best technology available. Thus, it is speculation about what the technology may bring and what it takes to operate it.

From an end user support standpoint it is less clear, given the geography of an SSC, where and what the consulting support should look like and its location.

The Organization

The computing organization consists of seven groups. They are Administration, Computer Operations, Network/Telecommunications User Support, Operating System/Utility Support, Special Projects and Technology Assessment. The next sections provide some specifics for each group in terms of function and size.

Administrative Groups

Functions: Overall direction, strategic planning, liaison with DOE, budget control, clerical and secretarial support for the computing facility.

8-10 people

Comment: May want to cover the technology assessment, computer
security and related DOE management issues.

Computer Operations Group

Functions: Operates central complex consisting of probably 10
discrete computer systems, mass storage and media management systems,
network control, configuration and facilities management, capacity
planning, data management, media management, accounting, supplies, data
entry and media conversion. Operations runs 24 hours/day, year round.
Four shifts of operators are imagined.

55-70 people
(Shift personnel may be 45-55 of this number)

Comment: The level of systems integration, operations management
tools (as part of the operating system), data media variety and topology
will have considerable influence on the actual numbers.

Network/Telecommunications Group

Functions: Provide local area ("campus"), wide area and
national/international gateway communications. Does the
capacity/configuration planning and management.

18-20 people
(~8 of these are shift workers - 'console operators')

Comment: Analytically intensive for planning and administration,
immature as an industry and extremely volatile. Can involve extensive
negotiation with tariffed carriers and component vendors. Few turn key
solutions are marketed. Long lead times for implementation.

User Support Group

Functions: End user support-from getting access to computing
resources through the support of users in development production of the HEP
codes. Computing library (documentation and other media), training and
consulting on HEP specific or general computing techniques, software
package specialists, (engineering, graphics). "Work Station" support
center for training users in the existing equipment as well as evaluating
the new.

28-33 people

Comment: The physical location of the people doing the suport is an
issue. What and how much consulting and support can be done
electronically? Should there be a strong bonding of user support people to
the IR's? What about the sociology and "careers" of the support personnel?

Operating Systems/Utilities Group

Function: Install and maintain vendor supplied operating systems and utilities packages. Modifies/tailors/tunes systems for performance and capacity optimization.

12-18 people

Comment: Again as for operations, the diversity and number of operating systems (vendors) which will be supported will drive this, augmented by the amount of local modification (specials) that are required/permitted. The management of very large data files and lots of them will be a major technical issue.

Special Products Group

Function: To research the requirements by the SSC community with the view of obtaining either commercially developed or in-house developed software products specific to HEP analysis and related activities.

6-8 people
(core group which would be augmented during the products' development)

Comments: This is a consumer products group with a charter to develop generally useful HEP software products where not available from other sources. It is intended to serve broad HEP/SSC community interests, not individual/unique and momentary requirements. Developed/tested and documented products are turned over to the User Support Group for long term distribution, support and maintenance. NOTE: The number of staff for this effort may be too few based upon comments from others reviewing the draft. I would agree, but the projects for initial staffing plan should be at least tentatively identified.

Technology Group

Function: Technology assessment of computing/telecommunication related hardware/software issues as it affects current computing, but with the emphasis on futures for SSC computing.

4-6 people

Comment: This group should provide advice to current acquisitions and operations, however, their main focus should be acquisition requirements near term (1-3 years), medium term (3-5 years), long term (5+years). The note in the Special Projects may apply here.
Bottom Line: Total staff between 130 and 165.

What Is Not Addressed?

1.   Administrative computing which must pay people, procure goods and services, track projects, generate reports to funding authorities....

2. Strategic issues such as the independence or inter-dependence of the IR's. We <u>assume</u> a legitimate need for the central computing roles described above and have not looked at alternatives.

3. Data Acquisition Computers - Their management and support.

4. Support for user terminals, work station, PC, in the form of installation, maintenance and repair.