Computing @SERC

Resources,Services and Policies

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SERC - An Introduction

- A state-of-the-art Computing facility
- Caters to the computing needs of education and research at the institute
- Comprehensive range of systems to cater to a wide spectrum of computing requirements.
- Excellent infrastructure supports uninterrupted computing - anywhere, all times.

SERC - Facilities

- Computing -
  - Powerful hardware with adequate resources
  - Excellent Systems and Application Software,tools and libraries
- Printing, Plotting and Scanning services
- Help-Desk - User Consultancy and Support
- Library - Books, Manuals, Software,

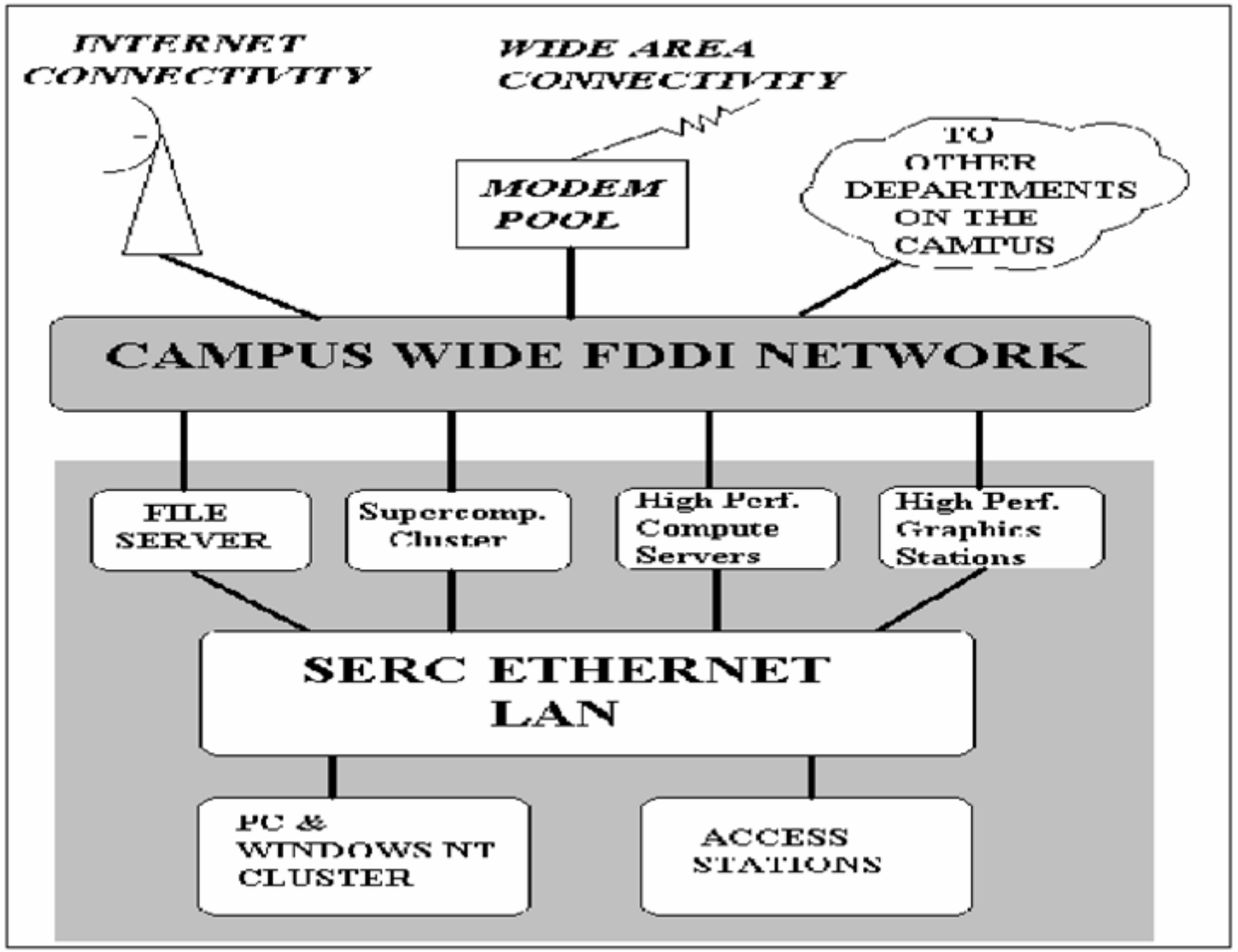
Distribution of Systems

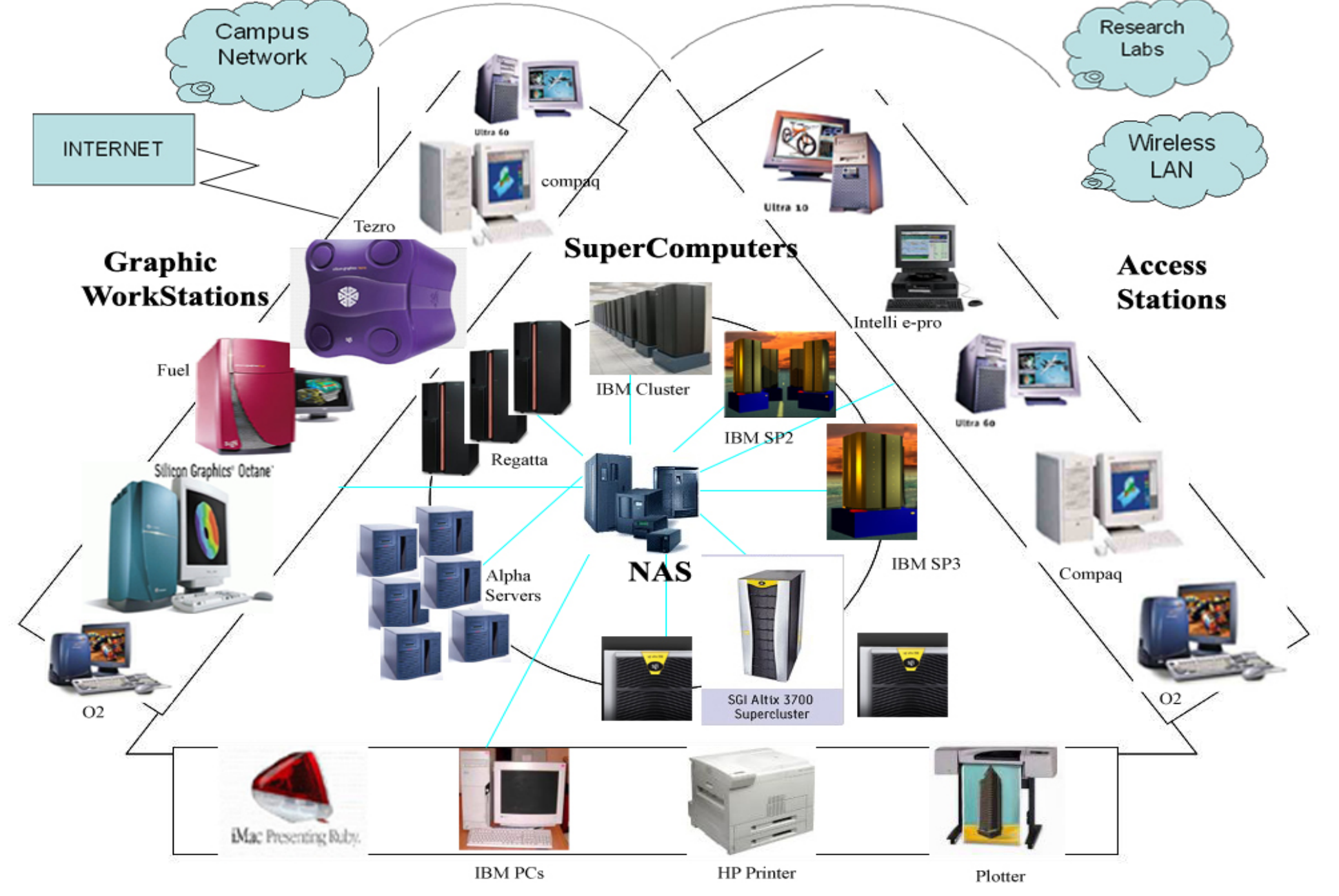
- SERC has 5 floors - Basement,Ground,First,Second and Third
- Basement - Power and Airconditioning
- Ground - Compute & File servers, Supercomputing Cluster
- First floor - Common facilities for Course and Research - Windows,NT,Linux,Mac and other workstations

Distribution of Systems - contd.

- Second Floor
  - Access Stations for Research students
- Third Floor
  - Access Stations for Course students
- Both the floors have similar facilities

Computing Systems




Campus Network
Research Labs
INTERNET
Wireless LAN
Ultra 60
compaq
Ultra 10
Tezro
SuperComputers
Graphic WorkStations
Access Stations
Intelli e-pro
Fuel
IBM Cluster
IBM SP2
Ultra 60
Regatta
Silicon Graphics Octane
NAS
IBM SP3
Compaq
Alpha Servers
SGI Altix 3700 Supercluster
O2
O2
IBM PCs
HP Printer
Plotter

Systems at SERC

- ***ACCESS STATIONS***

*SUN ULTRA 20 Workstations – dual core Opteron 4GHz cpu, 1GB memory

* IBM INTELLISTATION EPRO – Intel P4 2.4GHz cpu, 512 MB memory

Both are Linux based systems

OLDER Access stations

* COMPAQ XP 10000

* SUN ULTRA 60

* HP C200

* SGI O2

* IBM POWER PC 43p

Contd...

FILE SERVERS

5TB SAN storage

IBM RS/6000 43P 260 : 32 * 18GB Swappable SSA Disks.

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Contd....

- HIGH PERFORMANCE SERVERS

  * ***SHARED MEMORY MULTI PROCESSOR***

  - **IBM P-series 690 Regatta (32proc.,256 GB)**

  - **SGI ALTIX 3700 (32proc.,256GB)**
  - **SGI Altix 350 (16 proc.,16GB – 64GB)**

Contd...

* **IBM SP3.**

NH2 - 16 Processors

WH2 - 4 Processors

* **Six COMPAQ ALPHA SERVER ES40**

4 CPU’s per server with 667 MHz.

- DISTRIBUTED MEMORY

IBM P720 64 node , 256 processor Cluster

4 CPUs / node - 1.65 GHz

Contd..

- HIGH PERF. GRAPHICS STATIONS:
  - *SGI TEZROs and FUELs
  - * SGI OCTANE
  - * SGI ONYX WORKSTATIONS

Software at SERC

- Operating Systems
  - Aix
  - Solaris
  - IRIX
  - Linux
  - HP-UX
  - True-64

Contd..

- Numerical packages and Libraries
  - MATLAB
  - MATHEMATICA
  - MAPLE
  - ESSL

- Programming Tools
  - Compilers : C, C++, Fortran, java.,GNU
  - Debuggers : dbx, xldb, GNU’s gdb

Contd...

- Special-Purpose packages
  - FEM SOFWARE
    - NISA
  - Quantum chemistry packages
    - Guassian 94 , Gaussian 98
  - Molecular Simulation software
    - Insight II (Biosim etc.)
  - Schrodinger software suite – drug discovery
  - Molecular Operating Environment – tool for Chemical Computing Software development and deployment

Printing Services

➔ *Printing is a chargeable facility*

- Laser Printers - HP Laser Jet 8100 DN
- Color Printers – HP Design jet 500PS(A0), HP KPro 850, Xerox Phasor 6200 N
- Scanners – Umax scanner(upto 9600 dpi) , A4, A3 size, High resolution, including negatives and slides .

User Consultancy

- Help Desk - 444
- Help in using the system
- Problem resolution
- Support on the floor
- Program development, optimization,porting
- Backup services

Documentation

- On-Line Documentation
  - Man Pages
- Hard Copy Documentation
  - Available in SERC library
- CD-ROMs

Modes of Computing

- Interactive
  - user interacts with his job directly
  - eg. Program Development
  - Uses workstation or logs on to server
- Batch
  - User submits a command file for queued processing
  - No direct interaction. Eg. resource intensive jobs
  - uses the batch facility - Loadleveler, LSF,PBS-pro

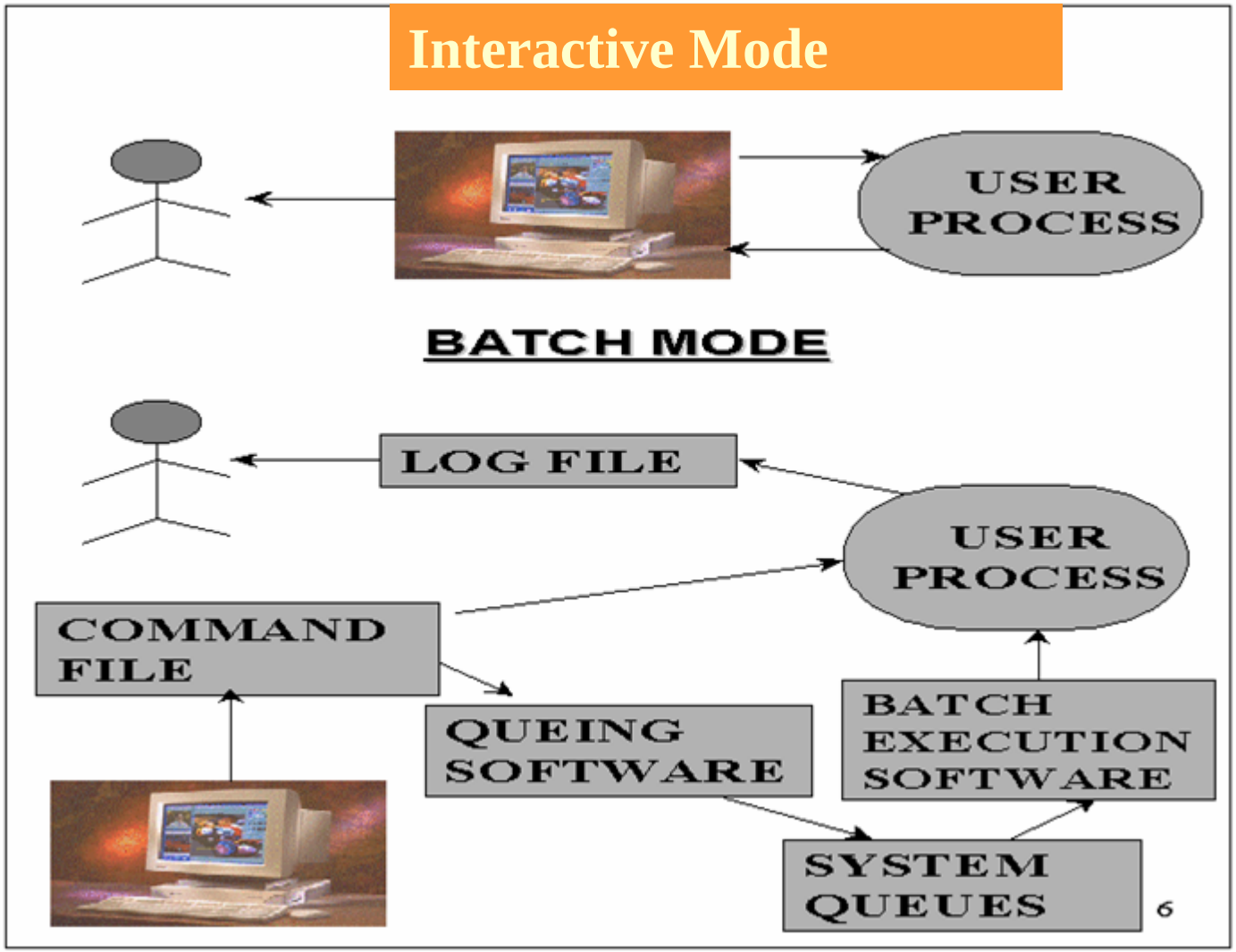
Using the Facility

- Who can use the facility ?
- How to gain access? Obtain an Account
  - Choose the right form, complete and submit to SERC
- When you are allotted an account you get
  - User-Id, Password,
  - Resources like disk space and access to a subset of systems at SERC

Computing Resources

- CPU - Hours,Minutes,Seconds
- Memory - KB, MB
- Disk Space - Blocks, MB,GB
- No. Of Files
- Swap Space - MB, GB
- Connect Time - Hours, Minutes,Seconds

Interactive Mode



Policies

- Policies are introduced ONLY to facilitate convenient ,smooth and effective usage.
- Policies change to reflect changing requirements.
- User's inputs help us in formulating effective policies
- Policy and other info. Communicated through notices, Message-of-the Day(motd), e-mail broadcast

Usage Policies and Computing Etiquette

- Proper use of Systems -
  - Handling systems with care
  - Escalating problems to Help desk and operating staff
  - Do Not rearrange systems
  - Do Not switch off/ reset or attempt to connect/disconnect components.
  - Crowding space around systems with books , water bottles etc.

Love Thy Neighbour

- Be sensitive to the needs of fellow users
  - Resources are finite - use them , ***don't lock them***
  - Playing audio files disturbs users
  - Computing and eating do not mix -eatables attract rodents,insects - they don't use computers for solving problems they love creating problem for computers
  - Systems are too expensive, treat them with respect
  - Don't use them as book rest, foot rest etc.

Resource Usage

- Resources are finite , use them effectively
- Do not run Background jobs
- Release disk space in Common areas like /tmp etc. promptly
- Resource intensive non-interactive jobs on systems meant for interactive use cause response deterioration

Resource Allocation

- Resources Allocated, based on computing needs on systems which are best suited for satisfying these requirements.
- Different groups have different needs
- Default Resource Allocation
- Additional Allocation
  - 1. Short term (a few days) 2. Long term
  - Faster Response to 1.

Resource Utilization

Very often increased resource requirements can be avoided by

- using compiler optimization switches
- reorganizing code ,data
- using better algorithms

Disk space requirements can be reduced

- compressing files

No. of files restriction can be avoided by using tar utility

Security

Physical Security

- Signing in/off at the Security Desk
- Producing the identity card on request by staff
- Leaving your bags before moving on to the computing floor.
  - All these are required to facilitate maintenance of security

Security - contd.

- You are responsible for all usage arising from your account - even its misuse by others.
- Anyone who can provide your userid/password combination can use your account
- Choose good passwords and frequently change them . Use Password checker
- You login to access a system for use.After use you ***have to logout***.

Security - contd.

- Not logging off and leaving unattended interactive sessions are sure ways of inviting avoidable disasters
- Protect your information and backup important info.
- Obtain your customization files from reliable sources
- Ensure that the software you download/borrow are safe and from reliable sources

User Participation

- *Users play an important role in making the centre a useful and effective facility*
- *Please provide valuable feedback*
  - *on your requirements - h/w ,software*
  - *on the health of systems to enable quick remedial action*
  - *on usage policies*
  - *on things which help you use the system and those that prevent effective use*

Participate - Help us meet your Computing Requirements effectively

Thank You