



# ICDS-ACI Guideline Series

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## ICDS-ACI-P030 Access Control

This is part of a series of documents that make up formal guidelines adopted by the Institute for Computational and Data Sciences at the Pennsylvania State University.



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Version History:

Date	Version	Name	Description
	1.0		Initial Release
6/12/15	1.1	Derek Leydig	Minor Corrections and Updates
6/28/15	1.2		Clarification on Faculty/PIs leaving the University.
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## 1.0 Overview

The Institute for Computational and Data Sciences - Advanced CyberInfrastructure (ICDS-ACI) is Penn State's high performance research cloud. ICDS-ACI is a balanced allocation of highly available infrastructure resources with complimentary services that are provided by ICDS.

## 2.0 Purpose

The purpose of ICDS-ACI-P030 is to establish policy for the lifecycle management of ICDS accounts that are created under the current state and configuration of ICDS-ACI, in concurrence with the latest revision of this document.

By requesting an ICDS-ACI user account, users acknowledge that they have read and understand all ICDS-ACI guidelines and applicable Penn State policies and agree to abide by said policies.

## 3.0 Professional Acknowledgement

Users are also asked to acknowledge their use of ICDS-ACI resources in resulting publications and reports with the following statement:

"This research or portions of this research were conducted with Advanced CyberInfrastructure computational resources provided by The Institute for Computational and Data Sciences at The Pennsylvania State University (<https://ICDS.psu.edu>)."

## 4.0 Scope

ICDS-ACI-P030 details the criteria for creating an ICDS-ACI account, using a user account, and terminating a user account. This guideline exists to ensure fair and equitable access to ICDS-ACI. Use of ICDS-ACI is restricted to facilitating research within the University or other function(s) pre-approved by the ICDS Director. Anyone violating these guidelines is subject to suspension and/or termination of their ICDS-ACI account.

ICDS-ACI-P030 applies to any person with an ICDS-ACI account, regardless of Penn State affiliation, as well as anyone who sponsors an individual with an ICDS-ACI account. In the absence of specific ICDS-ACI guidelines and policies, Penn State policies apply. ICDS-ACI-P030 augments the following Penn State policies:

- ◆ AD11 – University Policy on Confidentiality of Student Records
- ◆ AD95 – Information Assurance and IT Security (formerly AD20)
- ◆ AD96 – Acceptable Use of University Information Resources
- ◆ HR102 – Separation and Transfer Protocol

## 5.0 Guidelines

### 5.1 ICDS-ACI Accounts

ISC-ACI accounts are composed of user categories as described in the table below:

The Penn State Institute for Computational and Data Sciences      ICDS-ACI-P030 Access Control



User Category	Description
Principal Investigator (PI)	A Penn State faculty sponsor typically leading a research effort. PIs may sponsor any number of accounts, but these accounts must be used for research only. PIs are responsible for all of their sponsored account users. These accounts are subject to periodic review and will have to be renewed if the sponsoring faculty or the account holders change their University affiliation or fail to comply with Penn State or ICDS-ACI account policies. All user accounts will be assigned resources and job priority based on the allocations and priorities of their sponsoring PI. ICDS-ACI User IDs are based on the PI's Penn State Access ID.
Students/Postdocs/Researchers	Any graduate student, undergraduate student, postdoc, or other researcher supporting a PI's research. ICDS-ACI User IDs are based on Penn State Access IDs.
Staff	Any Penn State employee supporting a PI's research. ICDS-ACI User IDs are based on the employee's Penn State Access ID.
Sponsored Guests	A person supporting a PI's research who is not already affiliated with Penn State University and who works closely with a PI. ICDS-ACI User IDs are based on the sponsored guest's Penn State Sponsored Access Account ID. Sponsored Access Accounts may be requested through ITS Accounts Office

## 5.2 ICDS-ACI Account Requests

ICDS-ACI accounts are available through an account request process (ref. section 8.2 Workflow diagram). The accounts are governed by the following requirements for all users and sponsors:

### 5.2.1 Users

- ◆ ICDS-ACI accounts are available to Penn State faculty, students, postdocs, staff, and guests already having a University access ID
  - Guests must first secure a Sponsored Access Account from Penn State's ITS Accounts Office to obtain a University access ID
- ◆ ICDS-ACI User Accounts for Penn State students, postdocs, staff, and guests require a faculty sponsor (reference section 5.2.2, Sponsors)



- ◆ New users must submit a completed online Account Request form for an ICDS-ACI account
  - The account request form may be accessed directly via Penn State Web Access <https://accounts.aci.ICDS.psu.edu> or via the ICDS web site <https://ICDS.psu.edu/> and selecting “Request an ICDS-ACI Account”
  - ICDS-ACI User Account requests are processed through the i-ASK Center. Please contact i-ASK Center staff at [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) for assistance with requests if necessary
- ◆ Additional approvers may be required as necessary depending upon the details provided in the account request (e.g. computational and data requirements that span multiple departments)
- ◆ The account holder and their sponsor will be notified via email that the account request has been processed and an account has been created (or denied)
- ◆ Users are responsible for promptly notifying ICDS-ACI via email to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) if they are leaving Penn State or otherwise lose affiliation with Penn State
- ◆ Users are responsible for promptly notifying ICDS-ACI via email to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) if their sponsor needs to be changed (e.g. sponsor leaves or otherwise loses affiliation with Penn State)
- ◆ Users may be asked periodically by ICDS-ACI to renew their account
- ◆ Users and their sponsors will be notified when their account has violated ICDS-ACI or Penn State policy
  - Actions, including termination of the account, may be taken at the discretion of ICDS-ACI account managers. Please reference section 6.0 Enforcement later in this document.
- ◆ By providing your email address, you are subscribing to the Institute for Computational and Data Sciences news feed and will receive occasional emails with useful information about funding, training, and other opportunities. If you do not wish to receive the ICDS news feed, you may [unsubscribe yourself](#)

### 5.2.2 Sponsors

- ◆ Accounts must be sponsored by Penn State faculty or other Penn State **staff who have been pre-approved as sponsors** by ICDS. Sponsors are herein referred to as a Principal Investigator (PI). PIs are responsible to oversee use of ALL sponsored accounts
- ◆ A PI can sponsor multiple users, and users can be sponsored by multiple PIs
- ◆ Account requests will be verified with the associated PI
- ◆ Account sponsors are responsible for promptly notifying ICDS-ACI via email to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) if they cannot fulfill their duties as a sponsor (e.g. due to leave of absence from Penn State or loss of affiliation with Penn State)
- ◆ Account sponsors are responsible for promptly notifying ICDS-ACI via email to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) if any of their sponsored accounts should be terminated (e.g. a sponsored user leaves Penn State)
- ◆ PIs may be asked periodically by ICDS-ACI to review the accounts that they sponsor and notify ICDS-ACI via email to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) of any changes
- ◆ PIs will be notified when an account that they sponsor has violated ICDS-ACI or Penn State policy
  - Actions, including termination of the sponsored account, may be taken at the discretion of ICDS-ACI account managers. Please reference section 6.0 Enforcement later in this policy.
- ◆ PIs are responsible for oversight of accounts that they sponsor
  - Sponsored accounts that violate policy are subject to termination of all of a PI’s sponsored accounts, including their own



### 5.2.3 Advanced Users

- ◆ All user accounts must operate under the principle of “least privilege” to ensure that processes operate at privilege levels no higher than are necessary to accomplish required functions
- ◆ Users may request an exception to have elevated permissions on ICDS-ACI instances to accomplish legitimate research needs. Approval is at the discretion of ICDS
- ◆ Users with the capability for elevated permissions are not permitted to enable elevated permissions for other accounts.

### 5.3 Account Administration

All account requests, modifications, and related communications will be archived based upon audit record storage requirements of the Institute for Computational and Data Sciences.



## 5.4 Account Attributes

Accounts are configured with the following attributes and associated data storage options:

Attribute	Description
Account Name	Penn State employee/student ID or Sponsored Access Account User ID
Systems Access	<p>Dependent upon the PI's ICDS-ACI plan and associated Service Level Agreement (SLA). Plan options include:</p> <ul style="list-style-type: none"> <li>• Guaranteed Response Time (GReaT) – purchased allocation               <ul style="list-style-type: none"> <li>○ <a href="https://ICDS.psu.edu/computing-services/service-details/#GReaT">https://ICDS.psu.edu/computing-services/service-details/#GReaT</a></li> </ul> </li> <li>• ICDS-ACI Open Queue - no cost               <ul style="list-style-type: none"> <li>○ <a href="https://ICDS.psu.edu/computing-services/ICDS-aci-user-guide/">https://ICDS.psu.edu/computing-services/ICDS-aci-user-guide/</a></li> </ul> </li> </ul> <p>Temporary 30-day trial of ICDS-ACI</p> <ul style="list-style-type: none"> <li>• Try ACI – no cost               <ul style="list-style-type: none"> <li>○ <a href="https://ICDS.psu.edu/computing-services/">https://ICDS.psu.edu/computing-services/</a></li> </ul> </li> </ul>
Job Submission	Dependent upon the PI's ICDS-ACI plan and associated SLA
Storage Directories	<ul style="list-style-type: none"> <li>• Home – No cost; available to all users; backed up               <ul style="list-style-type: none"> <li>○ <a href="https://ICDS.psu.edu/computing-services/getting-started/">https://ICDS.psu.edu/computing-services/getting-started/</a></li> </ul> </li> <li>• Work – No cost; available to all users; backed up               <ul style="list-style-type: none"> <li>○ <a href="https://ICDS.psu.edu/computing-services/getting-started/">https://ICDS.psu.edu/computing-services/getting-started/</a></li> </ul> </li> <li>• Group – Fee-based; allocation varies with SLA; backed up</li> <li>• Scratch – One million files capacity; <u>NOT</u> backed up; routinely deleted after 30 days</li> </ul>
Wall Time	<ul style="list-style-type: none"> <li>• Zero wall time limit for GReaT accounts</li> <li>• 48 hours wall time limit for Open Queue</li> </ul>
Software Stack	<p>Access to existing pre-installed software packages</p> <ul style="list-style-type: none"> <li>• The stack includes application-driving software (e.g., compilers and communication libraries) and commonly used research applications               <ul style="list-style-type: none"> <li>○ <a href="https://ICDS.psu.edu/computing-services/software/">https://ICDS.psu.edu/computing-services/software/</a></li> </ul> </li> </ul>

Special requests should be submitted via an email to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu) and are subject to faculty-defined governance.





## 5.5 Account Modifications

Requests to change account attributes must be submitted to [iask@ICDS.psu.edu](mailto:iask@ICDS.psu.edu). All account modifications must be approved by an ICDS-ACI account consultant and verified by the sponsor of the account.

## 5.6 Account Lifecycle

The following table lists the possible states for an ICDS account:

Account State	Description
Pending	Login requires additional automated interaction
Active	Login directly
Inactive	Login requires a state change initiated by either the end user or the ICDS-ACI Operations Team. Note: Inactive status may result from system default settings or manual intervention by System Administrators. Refer to section 4.10, Account Reinstatement for account restoration
Deleted	Previously existing account is removed from the accounts system; audit trail maintained

The lifecycle of an account is dependent upon the user account type. The following table lists the maximum authorization periods for the different user categories:

User Category	Maximum Authorization Period
Faculty/PI	Indefinite as long as University affiliation is maintained or upon request for change to "Inactive"
Students/Postdocs/Researchers/Staff	Two years or as authorized by the Sponsor; annual review
Sponsored Guests	One year or as authorized by the Sponsor; annual review

Faculty/Pis who leave the University will maintain their ICDS account as long as their original Penn State Access ID remains active. See Identity Services' "Access Account Deactivation and Extension" site for more details, including the default duration. The determination of whether or not a refund will be issued for any unused services that were already paid for will be outlined in the signed Service Level Agreement (SLA) that originally granted access to ICDS-ACI services.

Faculty/Pis who leave Penn State and whose ICDS account has transitioned into an "Inactive" state can reacquire an ICDS account by first requesting a Sponsored Guest account from ITS and then submitting an ICDS-ACI account request.



Accounts may be transitioned to “Inactive” in certain situations at the discretion of the ICDS-ACI Security and Compliance team in coordination with the ICDS Leadership team. Situations where this can occur include:

- ◆ Any violation of Penn State or ICDS-ACI policies, guidelines, and procedures. ICDS-ACI guideline documents and procedures are available at <https://ICDS.psu.edu/computing-services/ICDS-aci-policies>
- ◆ Possible account compromise
- ◆ Loss of Penn State affiliation (in which case the user may be eligible for a sponsored guest account)
- ◆ Upon request of a sponsor who oversees the use of the account
- ◆ Termination of the last SLA between the PI and ICDS-ACI

## 5.7 Account Deletion

Deletion of an account does not necessarily mean that the data associated with the account will also be deleted. The handling of any data associated with an account is discussed in [ICDS-ACI-P020: Data Protection and Retention](#).

## 5.8 Account Transfer and End User Status Changes

User accounts are only to be used by the individual to whom the account is assigned. Although data associated with an account may be transferred to another individual via processes outlined in [ICDS-ACI-P020: Data Protection and Retention](#), a user account itself may not be transferred to any other individual.

Faculty/PIs who leave the University may transfer their sponsored accounts to other faculty/PIs upon mutual agreement of all parties involved and in coordination with the appropriate ICDS teams (Leadership, Client Engagement, Operations). The state of a sponsored account will parallel the state of the associated sponsoring account, with the exception of any sponsored account that previously has had separate actions taken against it.

Account holders are expected to notify ICDS-ACI of any status changes via a service desk request so that a determination can be made regarding any necessary changes to accounts. This requirement is in addition to the requirements outlined in Penn State Policy HR102: Separation and Transfer Protocol.

## 5.9 Access Control

All access to ICDS-ACI resources should only be executed in a secure manner:

- ◆ All account credentials must be stored and transmitted in a manner meeting University and ICDS-ACI requirements. As an example, “telnet” is not a permitted communications protocol for accessing ICDS-ACI resources since it passes login credentials in unencrypted form
- ◆ Account holders are not permitted to enable “Guest” accounts or anonymous access to data or services hosted on ICDS-ACI resources



- ◆ ICDS-ACI will provide a list of approved remote access mechanisms both on the ICDS website <https://ICDS.psu.edu/> and in the account approval message to end users
- ◆ Shared accounts are not allowed on ICDS-ACI and it is the responsibility of the PIs to make sure that their sponsored users are aware of this. Sharing passwords or credentials is a violation of University and ICDS policies and procedures. (Reference AD96: <https://policy.psu.edu/policies/ad96>)

Always remember: ICDS-ACI personnel will **NEVER** ask for a password.

All users, internal or external to ICDS, are required to lock their system in accordance with University policy and standards (i.e. AD95).

## 5.10 Compromise Response

If you suspect that an account compromise may have occurred, or if you identify a situation that could potentially lead to an account compromise, then it is your responsibility to report it. The following reporting structure should be followed

with progression down the list if you feel that the entity you are reporting to is not responding adequately to the situation:

- ◆ Principal Investigator
- ◆ ICDS-ACI Security
- ◆ ICDS-ACI Administrative Staff
- ◆ Penn State Security Operations and Services

When ICDS-ACI is made aware of a potential compromise, any potentially compromised account is rendered “Inactive” (refer to section 4.5, Account Lifecycle) and any potentially compromised node is removed from network connectivity and seized by ICDS-ACI administrators. If Penn State’s Office of Information Security (OIS) is not already aware of the compromise, then a report is submitted to them as well. If the compromise is validated, the node is fully scanned for any information classified as High (e.g. Personally Identifiable Information (PII), Controlled Unclassified Information, Export Controlled Data, etc.), and a report is submitted to OIS. Once mitigation instructions have been provided by OIS, the node is wiped and rebuilt by ICDS-ACI Operations.

## 5.11 Inactive Account - Reinstatement

Accounts may be rendered Inactive through manual intervention by system administrators. Manual intervention is directed by ICDS-ACI Leadership and is typically the result of possible or actual account compromise (refer to section 4.9, Compromise Response), policy infractions, activities deemed by ICDS-ACI as misuse of system resources, or to support audit and account refresh events. All manual intervention instances will be adjudicated by ICDS-ACI Leadership for subsequent account restoration and administering corrective action as required.



## 6.0 Enforcement

All account policies exist to facilitate research. Any PI, Faculty, Student, or Sponsored Guest violating any of the above policies are subject to immediate termination of their account. Data will be retained and can be transferred to the PI. Any employee, student, or visitor found to have violated ICDS-ACI-P030 may be subject to disciplinary action by their administrative unit, the college, or the University.

## 7.0 Supporting Documents

[ICDS-ACI-P020: Data Protection and Retention](#)

## 8.0 Appendix

### 8.1 Glossary

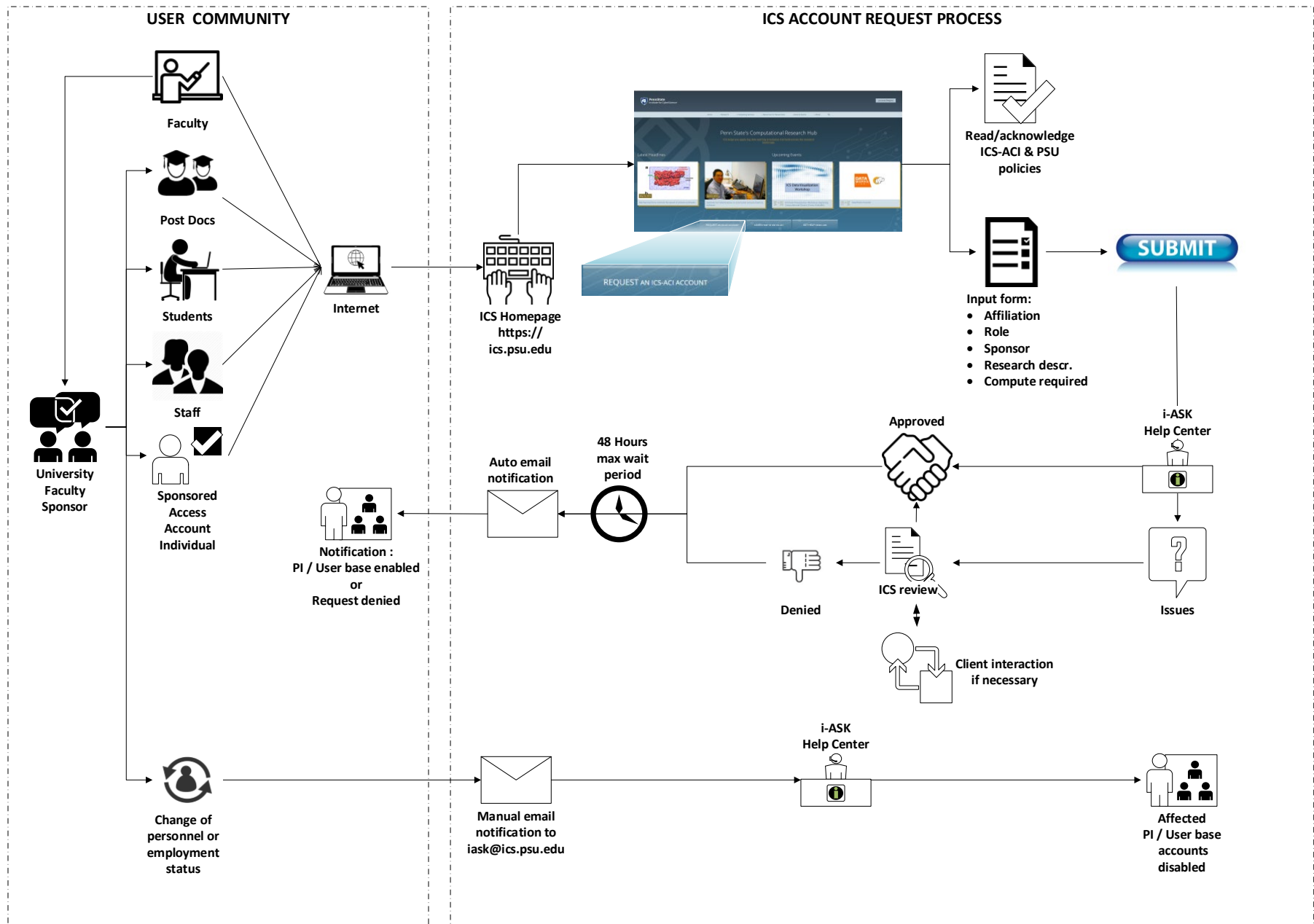
Term	Definition
ACI-b	ICDS-ACI sub-system configured to execute jobs submitted to a variety of queues, i.e. batch processing.
ACI-u	ICDS-ACI User-Specific “Development/Test” interactive subsystem where PIs may specify a system configuration for user-specific interactive sessions, including root access and user-defined software stack.
Batch	Executing or processing of a series of programs (jobs) on a system without manual intervention.
Core	Data processing unit within a server. The total cores per server is dependent upon the vendor’s architecture of the server.
Core Allocation	Amount of physical compute resources purchased by or granted to a user through ICDS-ACI plans.
F&A	Facilities and Administration charge, sometimes referred to as “indirect” or “overhead.”
GPFS	General Parallel File System.
Group	A self-defined set of multiple users—for example, students and researchers in a faculty member’s lab. Such rights as access to storage and allocation of resources can be delegated in an organized fashion by the PI.
Group Storage	Dedicated disk space for storing group-related data or research.
Guaranteed Response Time	The maximum time that it takes for a job to start execution after submission to a queue.



Home Directory	A user's dedicated disk space for storing personal files, directories, and programs. Directory that a user is taken to after logging into the system.
ICDS-ACI	Institute for Computational and Data Sciences - Advanced CyberInfrastructure.
ICDS-ACI-Burst	Queue to allow usage of compute resources in the ACI-b subsystem above a PI's physical allocation that are needed for a short time period.
ICDS-ACI-Guaranteed	Queue providing access to the ACI-b subsystem within a guaranteed time, provided request is within a PI's physical allocation.
ICDS-ACI-Open	Queue to provide user access to idle ACI-b resources that can be used during times when supply exceeds demand.
Legacy Systems	Pre-2015 ICDS computing systems, such as the Lion-X clusters.
Login Nodes	Front-end servers used to log in to the ICDS-ACI compute system.
NAS	Network-Attached Storage.
PI	Principal or Primary Investigator. Person, such as faculty, who is authorized to direct all of his or her research ICDS-ACI resources, e.g., access, storage, compute.
Pre-emption	The act of pausing or stopping a job that is currently processing in order to fulfill terms and conditions to other users under service level agreements.
Scratch Directory	Disk space dedicated for temporary storage of data.
Service Level Agreement (SLA)	Agreement between ICDS and Research PI in relation to research ICDS-ACI resources, e.g., access, storage, compute.
Subsystem	A unit or device that is part of a larger system, e.g., ACI-b.
System	The computing engine along with the software, storage, network, and peripheral devices that are necessary to make the computer function, e.g., ICDS-ACI.
User	A person, such as a student or faculty, who has a user account to use the ICDS-ACI resources.
User Account	The means by which a user can access a computer system. ICDS-ACI has four distinct user accounts: PI, Student, Staff, and Sponsored Guests.
Wall Time	A queue parameter that is set to define the maximum allowable execution time for a job once it has started.
Work Directory	User's dedicated disk space for storing research data.



## 8.2 Work Flow Diagram





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