# UIS Administrative Computer Center - Operating Guidelines

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I. **Document Objective**

The purpose of this document is to state the operational guidelines necessary to help ensure that the UIS Computer Center provides consistently responsive and available computing resources to our entire User Community.

It is realized that the Computer Center must be flexible on occasions to meet unforeseen circumstances. An Exception Procedure is documented below and will be followed when any of the stated operational guidelines are to be considered for compromise.

II. **Exception Procedure**

It is extremely important that the controls that have been put in place for the purpose of servicing our User Community retain high integrity and are not compromised. The purpose of this exception procedure is to protect our controls and to achieve this goal.

Any situation that develops which needs to contradict any of the directional statements made below will require the involvement of Administrative Computing Services (ACS) Management. Computer Center Support Personnel should not reject any User request that does not comply with the Operating Guidelines. Computer Center Support Personnel will notify ACS Management of the exception request. If the Computer User and ACS Management are unable to come to an agreeable resolution, the Computer Center will comply with the User's request.

Given the nature of an exception and the potentially adverse impact it may have, it may become necessary to communicate certain exceptions to executive management.
III. **UIS Computer Center Service Schedule**

**Computer Center Service Availability:**

- 24 hours per day 7 days per week (except during the UIS Change Window as noted below)
- Requests for on-site support during University holidays will be considered.
- Requests to extend or reduce the following schedule(s) will be considered.

**UIS Change Management Schedule**

UIS hardware, system software and database maintenance activity normally occurs every 2nd and 4th Friday evening of each month between 8:00PM until 8:00AM Saturday morning. A scheduled automated software reset will occur on all remaining Saturday mornings between 2:30AM to 6:00AM. Typically, changes are completed well within these timeframes. Services will be made available as soon as changes are completed and verified.

During the scheduled Change Management period there should be no expectations of computing services from any hardware platform within the computer center. However, it should be noted that certain specialized systems may have different Change Management Schedules that are more advantageous to the particular service being provided. Computer Users should consult with ACS management to determine service availability and Change Management schedule for specific platforms.

Although every effort is taken to ensure that implemented changes are of the highest quality, it is possible that service problems can result. The highest occurrences of technical problems result from errors made in the implementation of changes. Accordingly, computer users are most prone to encountering errors on Saturdays and on Mondays. This information maybe of use when scheduling critical business processes.
Production On-Line Service Availability:

Financial Systems (Accounts Payable, Purchasing, General Ledger)

The Financial Systems identified above are technologically limited and cannot service both on-line and batch update processing concurrently. The Office of the Comptroller manages online update access to these systems with batch jobs that toggle on/off on-line application update access. The following on-line schedule represents the typical service hours. Please contact the Comptroller’s Office for inquiries on this subject.

Monday thru Friday
- Accounts Payable/Purchasing: 7:00AM to 7:30PM
- General Ledger: 7:00AM to 8:00PM
Saturday: 8:00AM to 6:00PM
Sunday: 8:00AM to 6:00PM

Non-Financial Systems

Continuous on-line availability seven days per week 24 hours per day except for the following:
- University Holidays - All online systems are available but staff will not be onsite unless requested.
- UIS System Change Management Schedule (see above)

WEB Based Systems

All WEB based systems are dependent on computing services from the Office of Information Technology. Service interruptions may occur during their change management schedule. Their published change management hours are 5:00AM to 8:30AM Tuesday, Wednesday and Thursday of each week. In addition, WEB based systems are not available during the stated UIS Change Management Schedule.

Telephone Information System

The availability for touch-tone access to the UIS mainframe is based on the specific business application and is determined by the responsible administrative department. The ability of Administrative departments to extend services is only limited by the UIS Change Management Schedule.
Production Batch Service Availability:

<table>
<thead>
<tr>
<th>Day</th>
<th>Availability</th>
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<tr>
<td>Monday</td>
<td>12:01AM to 7:00AM</td>
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<td>Tuesday</td>
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<td>Friday</td>
<td>12:01AM to 7:00AM</td>
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<tr>
<td>Saturday</td>
<td>6:00PM to Midnight</td>
</tr>
<tr>
<td>Sunday</td>
<td>12:01AM to Midnight</td>
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Important Note:

- Please review SECTION VI. - Mainframe-Based Prime-Time Batch Processing for an explanation of the guidelines for batch job submission during prime-time, online service hours.
IV. **Processing Priority**

During prime-time hours (Monday through Saturday 9 AM to 5 PM), on-line production (including Web Systems) services have the highest processing priority.

The processing priority outside of prime-time hours is:

- Scheduled Production Batch Processing
- User Submitted Batch Processing
- On-line Production Services (including WEB Systems), User-Written On-line Programs

V. **Service Level Objectives**

This section addresses the service level objectives of the UIS Computer Center. It is important that the User Community and UIS discuss service expectations as early as possible in the development stages of new business applications. This becomes a very critical issue especially if the following service level objectives do not meet the operational business needs of a new or modified computerized system. Computer Center automation is tailored to meet each individual department’s objectives. Once automation detects the service levels have not been met, Computer Center staff is alerted to facilitate the timely delivery of services. The on-line service level objectives discussed below pertain to all production services within the UIS Computer Center, regardless of platform.

The Production classification of an on-line function or batch job signifies that a computing process has been developed, tested and documented in a manner that ensures the most reliable service offered by the UIS Computer Center. The User Community is encouraged to have their mission critical business processes defined under this classification.

**Production On-line Service Level Procedure:**

On-line service level means that the User and UIS need to agree upon the on-line response time that will be acceptable to both parties. This target is to be agreed upon by UIS and the Computer User of the on-line function. The agreement should occur before the on-line function is activated in the production environment.

An on-line function is assigned production status once all appropriate approvals are secured and the programs/objects have been migrated to the production environment through the authorized process. It is the objective of the UIS Computer Center to provide an average response time of 2.5 seconds or less over a measured five minute interval during prime-time hours, unless otherwise agreed upon. Response time is measured from the point the enter key is depressed to the point where the response is received and viewable on the terminal. It is important to note that this response time service level is based on access to the UIS Computer Center computing resources.
Because response time for WEB-based services is dependent on service providers external to UIS, this department cannot secure on-line service level expectations. However, response time within the UIS Computer Center computing resources should be no greater than an average of 2.5 seconds per transaction.

Several variables influence response time, including the amount of work the on-line transaction is being asked to perform. If the 2.5-second average response time expects to be exceeded, it is the technical developer's responsibility to address those issues prohibiting the targeted threshold to be achieved with all appropriate parties. This can be accomplished by consulting with the technical staff at the UIS Computer Center, and possibly, determining if the requested on-line workload could be reduced with the Computer User.

If the developer is unable to technically improve upon the anticipated response time, the User of the on-line function will need to provide written acknowledgement to the Assistant Director of Computer Services stating that the expected service level is acceptable.

**Production Batch Processing Service Level:**

A batch job is assigned production status once all appropriate approvals are secured in the Library Change Management Process, ATP/Move. All production batch jobs are submitted for processing by an automated job scheduler. The Computer Center uses Zeke as its automated scheduler. This job submission automation allows the Computer User to plan their business processing several months and even a year in advance.

The authorized Computer User has the responsibility of using the Workload Analyzer for mainframe-based applications. This product calculates the estimated processing time of the evening's scheduled workload. This includes processing dependencies from other business applications. If the processing time exceeds the available batch time allowed, it is the responsibility of the Computer User to reduce the scheduled workload to avoid potential processing overruns into the prime-time hours. Computer Users are encouraged to schedule as much of their workload as their business needs dictate, as long as it is projected to be processed within the available time frame.

It is important to note that any batch job executing during prime-time hours can adversely impact on-line response time.

It is the UIS Computer Center's responsibility to process all scheduled production work by 9:00AM the following business day. There are identified reports that are excluded from this commitment based on their high volume and/or special handling requirements. This volume threshold is currently set at 200,000 printed lines. The Computer User needs to inform the Computer Center at least 72 hours prior to scheduling work known to require extensive output preparation support.
User-Written On-line Programs

Response time service level commitments cannot be made for software written by the User Community.

User Submitted Batch Processing: (Iris, Smiris, etc.)

All User submitted batch jobs that do not require any intervention by Computer Center Personnel and do not have predecessor dependencies will attempt to be processed within 24 hours from the time of job submission. Jobs that print at the Computer Center or have predecessor dependencies have a service goal to not exceed 48 hours from point of job submission.

Distributed Systems Service Level Agreement

"Turn-Key" commercial business application systems deployed within or managed by the UIS Computer Center on non-mainframe distributed computing platforms often call for different support arrangements than UIS' mainframe support structure.

To ensure a common understanding, ACS will work with those piloting these distributed applications (including User Departments) at the initial stages of the project to document the operational and service level requirements of the system. This should be completed well in advance of Production implementation as it may identify additional computing resource requirements to accommodate the system and help avoid potential delays. The Commerce Route SYN CX Appliance and fsaAtlas SEVIS Server are examples of this type of agreement.

This agreement will minimally include the following topics:

- **Vendor Support Agreement / Commitment** - Summary of vendor services, support commitments and timeframes.
- **Business Criticality & Service Hours** - What are the hours of operation? Is this always or sometimes mission critical? This type of information will drive the on-call support expectations for both prime and off-hours incidents.
- **UIS Support Requirements** - UIS commitment to a level of on-call support and recovery response based on system criticality and service hours.
- **Automation Interfaces** - Identify opportunities to employ automation to simplify operational tasks and monitor system availability.
- **Disaster Recovery Expectations** - How long of an outage can be tolerated? Does the system require redundant resources for immediate recovery? What is the UIS backup and recovery position statement?

ACS cannot commit to items such as vendor developed code or other external computing resources that deliver services to the client. Examples are items such as, but not limited to, vendor application code, communication network resources and Web services.

Please contact the Assistant Director of Computer Services for further information.
VI. Mainframe-Based Prime-Time Batch Processing

The UIS Computer Center provides for mainframe-based batch processing services Monday through Friday 7 AM to 5 PM. The User Community is encouraged to only submit batch work during this time that is time critical to the University. Otherwise, batch work should continue to be processed during non prime-time hours.

This process supports unrestricted submission of production and non-production batch jobs for authorized users. During prime-time hours (Monday through Saturday 9 AM to 5 PM), on-line services have the highest processing priority. It is the objective of the UIS Computer Center to process as much batch work as technically possible without adversely affecting response time for any production on-line region. UIS is electronically monitoring on-line service levels and will dynamically alter performance of batch processing upon detection of unacceptable response time thresholds being reached. Depending on the on-line service levels, the system could be concurrently processing a significant number of batch jobs or may not be processing any batch work at all. As a result of these measures, batch service level commitments cannot be provided and there should not be any expectation to complete batch processing during prime hours.

ACS provides a public report under our EOS On-line Report Management System called "Prime Shift Batch Service Observation Report", Report Name "NDSBATCH" form name "DS40". The purpose of the report is to provide a daily picture of the Prime Time Batch Processing workload by department highlighting areas that could potentially impact service. This report is best viewed on a 132-character display "3270 Mod 5". If you need assistance contact Network Operations at 353-9260 or send an e-mail message to netops-list@bu.edu. It is recommended that questions concerning the potential affects of prime-time batch processing be discussed with your UIS application support liaison.
Testing in the Production Environment

Any batch job that has not been previously tested in the test environment must not execute in the production environment. The dangers of an untested batch job executing in the production environment could result in some or all batch work being electronically deferred. In addition, untested batch jobs can temporarily degrade on-line production services to one or more user departments.

Batch Update Jobs

It is highly recommended that batch update jobs NOT be submitted for prime time processing. Batch update jobs can cause service problems as described below. If at all possible, defer batch update processing to non prime-time hours.

Recoverability

Batch update jobs must be carefully examined by your application support organization prior to authorizing such work for prime-time execution. A special on-line restriction facility (Galaxy task UTDR) enables UIS management and user Management to pre-approve specific update batch jobs for prime time processing. These precautionary measures have been taken to protect against an update batch job failure causing the need for an emergency database recovery resulting in a service interruption that could affect numerous user departments. An update job that has been reviewed by your application support team and determined to be non-cancelable will be electronically rejected if submitted for prime-time batch processing.

Record Held

A batch update job that performs an update action holds the database record until the update process is completed. While the record is held, no other update process, including an on-line transaction, can also update the same record. An on-line user attempting to update a record that is already held by a batch update job will receive an error message and is prompted to retry the on-line update. The same affect is true if the first transaction to access a record to perform an update was generated by an on-line user. If a batch job attempts to update a record that is held, the batch job could fail on an error condition. Periodic monitoring for such failures is recommended and manual re-submission is suggested at time of failure. Read access to the held record from either another batch job or an on-line transaction is permitted and will not affect processing.
"Dirty" Reads

ADABAS allows read access to records held for update. If the read user receives an image of the updated record prior to the update actually being written to the database and the update process fails, the read user could have read information that may not be updated to the database. This is called a “dirty read”.

In most cases, the update will eventually take place. Most likely, the update batch job or on-line update transaction will be re-executed. However, you should be aware that this condition is more likely to occur during prime-time now that authorized update jobs will be allowed to process during the day.

Read-only Batch Jobs

There may be business reasons prompting computer users to restrict prime-time execution of some batch jobs that only perform read functions. It should be noted that a read-only batch job that is reading a record that is in the course of being updated by another on-line or batch process may contain results that are not expected. Such a timing event could cause an out-of-balance condition, especially for those data elements that are being tallied.

Predecessor and Dependency Relationships:

When jobs are scheduled for daytime processing it is extremely important that the department job scheduler understands the processing relationships for the job being scheduled. Jobs scheduled with incorrect relationships could adversely impact their department's production schedules and, in some cases, the production schedules of other University departments. In order to more easily differentiate between daytime and nightly production batch processes, UIS recommends departmental schedulers observe the following ZEKE Event-name guidelines and pay close attention to predecessor/successor processing rules for daytime production work:

- Prefix Daytime ZEKE Event-names with a "9" (Example: 90-Jobname)
- Daytime job submissions that would satisfy an EOJ condition will not be submitted for processing pending department analysis of job processing relationship.

The departmental scheduler should also use the scheduling analysis tools provided (ZEKE dynamic predecessor checking commands and WORKLOAD ANALYZER) before jobs are submitted for daytime processing.
Priority Processing

The Priority Processing classification is designed to allow a higher access to a processing job class (path) over all other batch jobs submitted for prime-time execution. The faster access to a processing path means the earlier the jobs will begin processing. The User Community is strongly encouraged to only use this classification to help expedite the processing of vital University business as determined by their management. Senior management approval, at a director level or higher is necessary to avoid excessive use of this classification. Such use could result in the unnecessary backlog of Priority Batch Jobs, along with impeding the throughput for all non-priority batch jobs. Priority Processing does not imply a commitment that the submitted work will be completed within prime-time hours. However, it offers a batch processing path that should not be heavily utilized. If a priority backlog develops, other processing paths will be reassigned to service priority work.

One Day Authorization

Individuals may have a need to process work in the production environment during prime time for crisis or emergency situations. This work must be authorized (See GALAXY task UTDA). Department managers have the capability to update an authorization table via GALAXY with a specific user-id or job name. This authorization is for one day only. All electronic management controls, as stated above, remain in effect.

Service Expectations

All batch jobs submitted for processing during prime-time that do not complete processing by 5:00 P.M. are automatically placed into the appropriate production or non-production processing paths and will adhere to the reported service level commitment under the Service Level Objective Section in this document.

Print Commitment

UIS encourages on-line viewing of all report output. However, if printing is required, local printing at the user’s location provides for significant benefits. If necessary and because of the critical nature of Priority Jobs, UIS will provide print support for Priority Jobs processed Monday - Friday 9 A.M. to 5 P.M. UIS will not support printing of non-priority work during these prime-hours.

Electronic Notification

UIS has the ability to provide automated notification for normal or abnormal termination of jobs that have been classified as Priority Status. To receive this notification the user department must be predefined to UIS’ automated notification system. Please contact the Network/Operations Support group at (353-9260) to verify that your department is defined or to request that your department be defined to receive this notification.
VII. Computer Center Service Safeguards

To help ensure reliable, consistent quality and responsive services for our entire User Community, several safeguards are in effect at the UIS Computer Center.

Production On-Line Processing:

- During prime-time hours, there should be no expectation to process any batch job that accesses any Production File. Please read SECTION VI. for prime time batch processing.

- The Technical Services Group has a 10-minute target time frame to analyze any on-line system-wide network failure before attempting to initiate recovery procedures.

- All changes to our operating system, data base software, data communication software, and hardware, located at the Computer Center, must adhere to the then current UIS Change Management Policy.

- All new or modified on-line application software designed to access production files need to receive appropriate approvals via the Library Change Management Process, ATP/Move. Once all approvals have been secured, the on-line software is migrated into Production

- Non-mainframe platforms (including WEB functions) may not have an automated change management process currently available. In these cases, it is expected that the appropriate management approve all changes that affect the production environment.

Production Batch Processing

- If a job fails, depending on the nature of the failure, computer center automation will attempt to automatically recover from the error condition. If the recovery attempt fails, support personnel (UIS or User) will be contacted soon after point of job failure for all problem jobs that have been defined as CRITICAL. In the event of a problem with a User's area of responsibility (submitted parameter, scheduling error) the User will be contacted at point of failure if the job is marked CRITICAL.

- Computer Users supporting production processing are encouraged to accept electronic problem notification telephone calls via AF/Remote. This technology allows for instantaneous notification to the support personnel that can best solve the identified problem.

- All batch jobs accessing production files are required to be designed to be able to be processed concurrently with on-line services.

- Batch jobs should not use tape media. Every attempt should be made to avoid tape processing. Electronic transmission can be a far more economical and reliable service. UIS offers FTP transmission with multiple encryption options for additional security.
Production Batch Processing (continued)

- There should be no expectation to have computer center personnel support the scheduling and parameter submission process.

- All new or modified jobs that are to be processed in Production Status are required to be re-startable by means of automation. This step will help expedite the recovery process through automation.

- All changes to our operating system, data base software, data communication software and hardware located at the Computer Center must adhere to the UIS Change Management Policy.

- All important batch jobs that routinely read (non-update) production files should adhere to the then current Batch Acceptance Test Procedure that includes receiving the appropriate approvals via the Library Change Management Process, ATP/Move. Once all approvals have been secured, the batch job is in Production.

- All batch jobs that update production files, no matter how frequent or important, are expected to adhere to the then current Batch Acceptance Test Procedure that includes receiving the appropriate approvals via the Library Change Management Process, ATP/Move. Once all approvals have been secured, the batch job is in Production.

- All changes to production batch jobs must adhere to the then current Batch Acceptance Test Procedure that includes receiving the appropriate approval via the ATP/Move System. Until the job is accepted by all authorized parties the job will remain in an Acceptance Test Status.

User Submitted Batch Processing (Iris, Smiris, etc.)

- Users are required to receive appropriate training from qualified UIS personnel.

- To conserve paper and to improve service, the Job Control Language for all Iris processing is available for on-line viewing via the EOS Product that is the Electronic Management Reporting System.

- In addition to viewing Job Control Language online, IRIS offers a limited capability to store reports in ERD for immediate on-line viewing. Each user is provided with up to 10 versions for each private portrait form and a private landscape form. For further information on using this feature call the EOS support group (currently 353-9179) or send an e-mail message to netops-list@bu.edu.

- Magnetic Tape requests are not permitted.

- No recovery will be attempted for failed jobs.
Note:

*It is highly recommended that important University work of a recurring nature operate in the Production Environment.*

*There are numerous service benefits to the University User Community placing jobs into the Production Environment. The Production Environment offers automated monitoring and problem recovery, electronic problem notification in the event of a failure, and an overall higher processing priority over any other work running on the mainframe resulting in a higher confidence level that your business needs will be met on time.*

*In addition, jobs placed in Production drastically reduce User Department dependencies on their key employees.*

**User-Written On-line Programs**

- All Users that develop their own on-line software must first satisfy the training requirements sponsored by the UIS Training Center. Loss of development privilege may result if a User clearly demonstrates that he/she has intentionally violated the instructed use of the software tools, and as a result, has adversely impacted the computer services of the remaining User Community.
VIII. Departmental Computers

Any department that is considering installing a computer with the intent to exchange data with the UIS mainframe should contact both Administrative Computing Services and the Distributed Computing Services Department of UIS at their first opportunity.

To help expedite a successful installation, it is important that all technical connectivity issues, expected service levels, and vendor support issues are addressed prior to finalizing the acquisition of the equipment.

It is highly recommended that departments insist on contractual language with the hardware/software supplier that protects the University from having to resolve technical connectivity problems after the equipment has been accepted. The Office of General Counsel provides extremely effective software and hardware contract language that has proven to be very beneficial in securing long-term success with the acquired technology and effective responsiveness from the supplier. Insisting on using the University contract, instead of the suppliers, can significantly improve service while drastically reducing annual operating costs.

IX. On-Line Viewing of Reports

Systems should be designed to provide direct access to the Computer User's information. The print distribution process is very labor intensive, error-prone, unsecured and costly. The most effective method to review information is by accessing information on-line. If paper is required, printing only the information that is necessary can be best accomplished by printing at the User's location.

EOS is an Electronic Report Management System that allows for reports to be viewed on-line without requiring any programming changes. The following are the operating guidelines for the EOS Product.

Service Level Commitment:
Electronic reports will be able to be viewed by all authorized Users of the electronic report immediately following the execution of the batch job.

Reports To Be Defined To EOS:
All production batch reports should be defined to EOS. Even if Computer Users elect not to view the information on-line, the product provides invaluable assistance during a print and/or disaster recovery process.
On-line Retention of an Electronic Report:

The on-line retention of an electronic report can be either version or date managed. Version managed reports will remain accessible until the next electronic generation of the same report. Date managed reports are accessible for some predetermined time period, after which, they are purged from the system. Excellent candidates for date managed reports are TEST and IRIS reports. If these are needed for some additional period of time, they may be archived (see Section X - Report Archival). The Computer Center’s EOS support person must be consulted when determining the most effective retention method.

Archival of Electronic Reports:

Archiving (See Section X - Report Archival) is the process of copying the electronic report to another storage medium for purposes of eventually restoring the report for on-line viewing. Restoration time can vary from minutes to over one hour, depending upon the report size and the number of requests for retrieval.

Because of the dramatic difference in cost, archiving through the use of the EOS facility is encouraged as the choice output media over hard copy printing.

Distribution of Electronic Reports:

An unlimited number of authorized users may have access to an electronic report, but access will be granted with the same discretion as access to automated data files. The local, departmental EOS Administrator can manage selective viewing of components within a report.

Printing at User Locations:

Users may want to print sections of a report or the entire report. This process can be effectively supported at the User's location.

Printing at the Administrative Computer Center:

Electronic reports that are viewed on-line should not be printed at the Computer Center.

Product Administration:

Administration of changes to the electronic distribution and retention, and establishing on-line and/or hard copy viewing, will be performed by the Department Coordinator under the direction of the Data Trustee.

Product Training:

Department Coordinators will be trained by UIS. The coordinators will be responsible for direct training and consulting to their department. UIS will provide consultation to the Department Coordinators.
X. **Report Archival**

UIS offers the User Community a facility that is encouraged to eliminate hard copy printing at the Data Center which is used for information to be retained for longer periods of time. The facility routes this information to EOS for on-line viewing.

The creation, access and storage of hard copy print are very labor-intense, error-prone, and costly processes. In addition, placing sensitive information on hard copy reports creates data security vulnerability. With the integration of currently installed technology within UIS, the University Community is able to safely retain important information in its electronic form and view the information on-line.

**How it Works**

Instead of printing, the information is stored electronically on EOS in report format. The user simply initiates an electronic request to view the report on-line. If the report is not accessed for a predefined duration, it is electronically archived to a different, less costly storage platform. Once the user requests the report, it is either restored from the archived storage medium or accessed from the ERD report file.

**Conditions for Eligibility**

Following are some of the opportunities for using the EOS archiving facility:

- Any report where hard copy prints being done at the Computer Center will be eliminated.

Please consult with the UIS EOS support person for further candidates and opportunities.

**Service Level Commitments**

The current version of a report is available for on-line viewing as soon as it has been produced. Older versions that have been archived can be retrieved for on-line viewing within 30 seconds to 10 minutes, depending on the size of the report. In the case of retrieving a large archived report, the computer user is able to perform other computing activities during the period the restore is occurring.

**Report Retention Definition**

Certain reports are known to require extensive retention periods. EOS has the capability to store for long periods including perpetuity. Please see the EOS Administrator for more details.

To ensure the reliability of data on the archival storage devices, two copies of each report will be retained. Also, the data will be rewritten automatically on a regular basis to prevent loss through storage medium aging.
XI. **File Transfers**

Applications for these services are numerous. Electronic file transfer improves service, minimizes delivery delay, and reduces costs by eliminating manual transcription errors and the re-keying of information that is already stored in electronic form. File transfers can occur as a download where information is transferred from the mainframe “to” to another computer system or as an “upload” where information is transferred “from” a departmental system or an External Data Exchange Partner’s system to the mainframe. Certain conditions apply to each of the file transfer categories:

| Any batch FTP process must adhere to the then current FTP standards published by the UIS Information Security department – Tel. 353-9004. UIS now offers many encryption options for enhanced security of electronic file transfers |

**Downloads to Departmental Systems:**

Any file to which a user has security access can be downloaded to a departmental system. It is the users’ responsibility to secure sensitive/private information once it resides on their system. The terms of the University security non-disclosure agreement, signed when obtaining access to the UIS system, applies to all downloaded data. All user download data sets will conform to the currently established UIS data set naming convention standards. User download/extract data sets created from the Galaxy system will be available on the mainframe for a period of seven (7) days from the date of creation. Data sets created out of IRIS will conform to the individual departmental data retention agreements.

**Uploads from Departmental Systems:**

Transaction data sets that are being used to update UIS production databases will be assigned a production data set name and can be used only in conjunction with UIS production jobs. New transaction data sets to be included in production systems will be assigned an appropriate security access profile and must pass through a pre-arranged acceptance test procedure.

Other transaction data sets that are to be uploaded need prior authorization and arrangement with appropriate UIS personnel. Non-transaction datasets that are uploaded must conform to the currently established UIS standard data set naming conventions. Approval to perform electronic uploads to the mainframe will be granted in all instances where mainframe storage adds value to the data or business function.

Uploads require the use of a SECUR-ID token.

**Support Expectations:**

The Distributed Computing Services group within UIS is available to assist with the installation and use of all supported file transfer products. The support schedule for departmental file transfer processing is from 9AM to 5PM - Monday through Friday only. Requests for support outside these timeframes should be directed to the Director of Distributed Computing Services.
Response Time:
When performing an upload or download process the speed of the transfer will depend on the specific type of communications equipment and file transfer product in use. Overall time to transmit the data set is also directly dependent upon the size of the file being sent.

XII. Guidelines for UIS Logon Services and Methodologies

User-ids and passwords used to logon to the UIS mainframe are considered proprietary data belonging to UIS. Any logon service or methodology prompting for or using these data, must receive approval from the UIS Data Trustee.

- All University personnel having requirements to develop logon services or using logon methodologies to the UIS mainframe should “register” with the UIS Information Security Department by calling 353 - 9004. Such processes are known as “screen scrapers” or automated scripting software. The benefit will be that “registrants” will receive timely notification of any changes to the mainframe logon screen, services or software.

- The UIS Information Security and Distributed Computing Services should be consulted prior to the purchase of any development tool that will provide logon services to UIS facilities.

- Logon services and methodologies should be reviewed by UIS to assure that the implementation techniques provide adequate protection levels for UIS proprietary information.

XIII. Storage Management

The UIS Computer Center is the record custodian for all administrative electronic files stored at the computer center. As custodian, the Computer Center is responsible for the maintainability, recoverability, and service accessibility of these files. Accordingly, the electronic files are frequently backed-up for recovery purposes. Also, the Computer Center archives files by transferring the electronic files from disk to tape. In addition, the Computer Center refreshes all archived data by reading the data retained on tape and periodically rewriting the data onto new tape volumes. The purpose of this process is to ensure readability of the old data that has not been accessed for long periods of time and also to consolidate physical space on the tape volume to improve media utilization.
The purpose of the archival process is to maintain a high degree of service performance by removing infrequently accessed data from the heavily accessed disk storage systems and transferring these files onto less expensive storage technology. When an electronic file is created on disk storage, it remains on disk for a certain time period before becoming eligible to be archived to tape storage. Once eligible for archive, a file is moved from disk to tape and given a unique expiration date based on the dataset retention rules in effect for the file.

A file will remain in archive storage until it is restored to disk or when the file's expiration date is exceeded. Restoration to disk is an automated process and is triggered by the on-line transaction or batch job needing access to the archived file. A file is automatically deleted from archive storage once the expiration date has been reached. Once deleted from archive, a file cannot be retrieved.

Files receive their default retention period based upon their dataset name and the disk volume from where they were archived. In addition, the data trustee can request exception retention period definitions for a file when the default value is inadequate for their requirements. For example, a file needed for historical, business, legal or financial requirements may have retention requirements that exceed the default definition. In other cases, the default value may be longer than necessary and retention can be reduced to conserve tape/disk resources.

The RDS System (Retention Dataset System) is to be used to define file retention requirements that are not met using the retention default periods. This system enables the Data Trustees to approve a retention period to a file that is greater or less than the default retention value. This system is under Galaxy and offers features that include electronic user notification prior to the expiration of defined files. The use of this system is strongly recommended, as it not only provides for the efficient management of storage, but also offers notification features that can prevent the loss of important data resulting from incorrect retention definitions.

Please review the UIS Programmers Guide, available under (Test) GALAXY, for more detailed information regarding disk/tape management guidelines at UIS. There are instructions and examples on how to request exception file retention as well as a brief overview of the software products used to manage UIS storage resources.

It is the responsibility of the UIS Data Trustee, with the assistance of Application Services, to ensure that electronic files have the appropriate data retention at the time the file is created.

It is worthy of note, for precautionary reasons, all electronic files either backed-up or archived to magnetic tape have two images created. Each image is stored on a separate tape volume and is electronically transported to two separate automated tape robotic systems. Each system is located in different computer rooms to ensure the recoverability of the data in the event of a disaster in one of the locations.
XIV. **Disaster Recovery**

The UIS Computer Center is a subscriber to commercial disaster recovery services. Our agreement provides the computer center with Hot Site recovery services. A Hot Site is a fully equipped computer room with all appropriate hardware. As a Hot Site subscriber, the customer’s specific computing requirements have been predetermined and are operationally available on standby mode in the event of a declared disaster. Hot Site subscribers also receive test time to help ensure that their recovery plan will effectively work at the recovery location. UIS tests the computer center’s disaster recovery plan twice annually.

Our disaster recovery provider is responsible to recover our mainframe-based production business applications within 48 hours from point of disaster declaration. In addition, they are responsible for staffing technical personnel to implement UIS' unattended disaster recovery plan. UIS has designed a contingency plan to prepare for the worst disaster scenario which is the inability of the center’s technical personnel to oversee the recovery process whether onsite at the alternate center or via remote communications.

**Scope of UIS Recovery Responsibility**

ACS is responsible to recover the computer systems, services and data resources located within the UIS Computer Center. Recovery of external University departmental business systems is outside UIS' scope at this time and is the business user’s responsibility.

**Recovery Plans:**

At point of disaster, senior management would declare an emergency condition with our provider. They would immediately make available all contracted equipment. UIS would send all backup data to the hot-site location. They would recover the UIS mainframe computing environment within 48 hours at their site. Electronic access to the Hot Site mainframe will be through the Internet. Computer Users will be informed of the URL address. In addition, our provider will arrange for immediate delivery of as many 100 local terminal setups so that critical University departments may establish quick access to the alternate processing facility.

The University would have use of the Hot Site facility for up to six weeks. The extent of the damage inflicted on the computer center will dictate the recovery events following the six weeks allowed at the Hot Site. The University is also entitled to install equipment on an interim basis, for as long as six months, in one of several computer centers operated by our hot site provider while full restoration is being implemented at our original site.

In the event of a multiple disaster, our provider remains responsible to provide hot site services to the University. Their main selling point over their competition is that they do not over subscribe and are prepared to deal with a major regional disaster.
Contingency Planning:
The computer center has developed and consistently maintains contingency planning documentation. There are two sections of the documentation. The first section is shared with our provider and describes the operational step-by-step procedures necessary to recover our production applications at their site. The second section defines a recovery action, based on all potential crisis scenarios.

Accordingly, it is very important that each administrative department determine its own need and develop, where appropriate, contingency plans specific to their operations. In the event of a disaster, effective plans should help ensure that critical business functions are minimally impacted. Administrative departments need to develop and maintain their own plans that will help them take the appropriate recovery steps. For example, all office systems pertinent to an administrative department’s critical operations should have an appropriate business resumption plan. These plans should also address “what if” scenarios in the event that vital data exchange partners can not, for whatever reason, provide mission critical services.

The UIS Computer Center would be happy to provide guidance in the development of such plans.

XV. Technical Assistance

Technical assistance is provided whenever administrative computing services are available. Users of the UIS computer system requiring technical assistance are urged to logon and access the online help system (ONLHELP). However, if the ONLHELP system is not available, please refer to the Boston University Telephone Directory for instructions. The directory provides telephone and beeper numbers to use to contact support personnel for all technical service needs.

Other useful "how-to" and user system documentation can be found on the WEB at the following address, http://www.bu.edu/uisacs

XVI. ACS Automated Services

ACS has developed sophisticated automation to facilitate our objective to consistently provide responsive and available computing resources to our entire User Community. We eliminate human dependencies, and instead, leverage electronic means to manage computer software and hardware resources. Over time, we have developed an extensive portfolio of automated solutions, many of which can be ported to any NT or AIX environment. We can monitor the utilization of resources and notify support staff at pre-defined thresholds, which allow for adequate time to make any necessary adjustments. If the availability of certain resources is essential, they can be automatically restarted should they fail. If you have any of these environments, ACS invites you to take advantage of these facilities.

If interested, contact the Assistant Director of Internal Systems Development to arrange for a consultation.