Executive Summary

This Service Level Agreement defines the support provided by UCIT to the University of Cincinnati’s Storage Area Network (SAN) users as well as the role and responsibilities that must be adhered to by the participating party in order to meet the support levels defined under this SLA. The inclusion of guidelines to be followed by the participating party is necessary due to the potential risk of degradation of the Storage Area Network environment.

Term of Agreement

This Service Level Agreement will remain in effect for one (1) year. At the end of the term, it may be renewed on an annual basis by mutual agreement of all parties and a new copy of the SLA will be prepared and signed by the appropriate parties. If the SLA is not renewed, then any guarantees or warranties of service provided by UCIT equipment will be considered null and void on the expiration date of this SLA.

Modifications to this SLA may be made only by mutual consent of all parties. If modifications occur, a signed and dated addendum must be executed and attached to the SLA.

Purpose of Agreement

This SLA is designed to ensure the proper operation and overall integrity of the Storage Area Network (SAN) maintained by UCIT - Systems & Operations (S & O). The document describes the responsibility of all parties attached to the SAN along with the associated fees of the department requesting storage space on the SAN.

Scope of Services

The Storage Area Network is operated and maintained by UCIT - Systems & Operations to support enterprise activities. Recognizing that departmental solutions exist that require large amounts of reliable, scalable, and highly available storage space at a reasonable cost, UCIT is willing to connect users to the SAN for an agreed upon monthly fee. (Appendix A)

Description of Services

UCIT Systems & Operations has defined a repertoire of products and services that it normally provides which can be referenced at: https://www.UCIT.uc.edu/billing/ Should someone need
something that is not included in this list the issue should be raised with UCIT S & O management who will make a determination as to whether the item can be considered for inclusion.

**Data Center services**

All physical computer systems covered by this agreement will reside in UCIT’s Data Center located in G95 of the Medical Sciences building. The Data Center is physically secure, environmentally controlled area with a raised floor.

**Help Desk services**

The UCIT Help Desk will provide the services described in this service level agreement.

**Roles and Responsibilities**

In order to guarantee the integrity and availability of the SAN, both parties must agree to specific roles and responsibilities as detailed below.

**UCIT Systems & Operations**

- UCIT will support and maintain all hardware and software required by any of UCIT’s Enterprise Production Class SAN.
- UCIT will be responsible for creating, defining and maintaining Storage Groups, RAID Groups, LUNs, and Hosts accessible through the agent software.
- UCIT will create, define, and maintain all necessary zoning in the fiber network associated with the SAN.
- UCIT will assist with the initial configuration of all nodes to be connected to the SAN.
- UCIT will maintain a premium support with the vendor including the “Phone Home” option that automatically notifies UCIT and the vendor of hardware or software problems in the SAN.
- UCIT will retain all administrative information to the fiber network attaching the SAN. The administrative passwords will be changed on a regular basis or at any time UCIT - Systems & Operations deem necessary.
- UCIT will provide at least 24-hour notice of scheduled downtime to the system administrator and/or local contact by e-mail, voice mail, or both. In addition, scheduled maintenance of the SAN will follow established UCIT Change Management procedures and will be published on the Change Management calendar of events. All scheduled changes can be viewed, by Exchange users, by accessing the CMS folder under Public Folders defined to Exchange.
- UCIT will provide support and/or technical assistance to local administrators on interface and integration issues pertaining to the fiber network SAN connectivity.
- UCIT will maintain a detailed document describing all systems connected to the SAN fabric. While the entire document will only be available to UCIT - Systems & Operations
staff, portions of the document may be provided to individual departments detailing information for their systems.

- Near the end of the agreement’s term UCIT will meet with participating party to discuss future storage requirements

**Participating Party**

- Administrators will not attempt to update or modify the SAN Software Agents or HBA drivers without first contacting UCIT.
- Administrators will not remove their attached systems from the SAN without consulting and coordinating with UCIT.
- Notification must be given to UCIT for scheduled downtime. In the event of unscheduled downtime, the UCIT Help Desk must be notified as soon as possible.
- Two points of contact, with administrator access privileges, must be provided for all systems. In the event there is only a single technical point of contact, an administrative contact can be substituted.
- Administrators are responsible for the purchase and maintenance of HBA hardware, software drivers, and associated fiber. In this instance, fiber is the connecting medium between the attached system and the SAN fabric.
- Administrators are financially responsible for the installation of the connecting fiber. If the fiber run is longer than 8 feet (4 floor tiles), then a detailed wiring route is required and must be approved by the data center manager.
- Administrators are responsible for ensuring that the server has an extended support agreement in place with the hardware vendor.
- Administrators will ensure that their servers are kept current with the latest operating system updates and security patches.
- Near the end of the agreement’s term the participating party will meet with UCIT to determine future storage requirements.

**Service-Level Management**

**Availability**

Availability of the system is normally stated as percentage of scheduled uptime. Regularly scheduled downtime to perform routine maintenance on the hardware, software, or network is not considered as times the system would normally be available. The availability objective for the Storage Area Network will be at 99.9% of scheduled uptime.

System maintenance is mandatory to ensure the ongoing stability and performance of the SAN. Outages are also periodically required to install additional upgrades to application components. Recognizing this, the following schedule is established to provide the opportunity to perform these functions:

- The scheduled outage will occur on the third Saturday of every month beginning at 20:30 hours and will end at 05:00 hours Eastern Time Monday morning.
If less time is required than is specified in this document, then the system will be made available to the end users.

All system outages will be scheduled in accordance with UCIT’s Change Management policy and procedures.

Constraints

It is possible that some problems may occur, such as a break in a communication line, which requires emergency downtime, and are beyond the ability of UCIT S & O’s ability to control. When such situations occur, UCIT S & O will notify the Help Desk of the problem and will continue to do this on a regular basis until the problem has been resolved. The resulting outage will not count as an outage for SLA purposes. UCIT S & O is also dependent on the availability of services of vendors providing the infrastructure, tools, and product.

Performance Expectations

Performance can be affected by many factors, which may be difficult to define and/or anticipate due to the nature and uses of the underlying systems and clients. Further, it is recognized that perceived response time by users is a critical performance expectation. Therefore, in cases where the perceived response time experienced by users becomes an issue, UCIT will make every effort to determine the root cause and resolve the problem as quickly as possible.

Measurement Tracking and Reporting

It is expected that UCIT S & O will monitor SLA attainment by measuring actual performance against negotiated levels. This will be accomplished via a set of appropriate metrics that will be agreed to between the customer and UCIT S & O and reported to both organizations on a quarterly basis.

Problem Management

Any problem experienced with the enterprise SAN should be reported in accordance to UCIT’s Problem Management process. To report a problem with the SAN, contact the Help Desk at 513.556.HELP where the information will be taken. If the reported problem is such that extensive downtime will be experienced, periodic updates will be provided through normal channels every two (2) hours until the problem is resolved.

Fees and Payment

Fees for space on the SAN will be assessed on a monthly basis and charged to the participating department at the agreed upon rate listed bellows.

Department UC FLEX Number:
Monthly Fee for SAN Space: $X.XX per/month

SLA Agreement Signatures

The signatures of this document indicate agreement to its content, that it is valid, has achievable objectives, and represents the intent of UCIT and the participating party to meet their respective responsibilities as outlined in the document.

UCIT Approvals

_________________________  ____________________________  _____________
Signature                      (Print name)                  Date

_________________________  ____________________________  _____________
Signature                      (Print name)                  Date

_________________________  ____________________________  _____________
Signature  Associate Vice President
                      UCIT Systems & Operations  Date

Customer Approval(s)

_________________________  ____________________________  _____________
Signature                      (Print name)                  Date

_________________________  ____________________________  _____________
Signature                      (Print name)                  Date
Appendix A

SAN Funding

Executive Summary

The University of Cincinnati SAN environment is made up of a combination of enterprise storage resources from StorageTek, IBM, EMC, and Hitachi to form a heterogeneous world class SAN environment. The environment consists of miles of strands of fiber interconnected by state of the art managed switches making it possible to transfer data at a rate of over 100 MB/Second which equates to a transfer of approximately 30 GB/hour. This type of ability allows for faster backups, faster data access, and thus a more efficient and productive environment.

SAN Benefits

- Higher data access speed
- Central management of storage allowing for extremely dynamic functionality
- Increased flexibility, scalability and expandability
- The redundant architecture eliminates single points of failure
- Decreased storage costs
- Decreased technology costs while increasing access to technology

Funding Model Basics

The SAN Funding Model consists of three individual components; a one-time single configuration and connectivity charge, and monthly storage charge. These components are defined as follows:

- **Configuration and Connectivity**: The initial connection fee is based upon individual server, for every newly attached server this fee will be applied. This fee covers the cost associated with the infrastructure of the environment including fiber, switches and management software. This fee also covers the cost of personnel to architect and configure your connections.

- **Storage**: This is a monthly fee that was calculated based upon the storage assets currently in place. This figure takes into account the management of the storage, the chassis which houses the disk, the disk itself installed and the maintenance costs paid yearly for support. This cost can vary based upon the amount of storage used/required.
Configuration and Connectivity

This is a one-time charge designed to assist with recovering two primary expenses. The first being the time it takes to work with the user department in defining and attaching their server to the SAN. Secondly, to assist in recovering cost of providing the connection between the server and the SAN via the data switch.

Configuration cost is based on five (5) hours effort at a rate of $70.00 per hour and includes the following: ($350)

- Physically connecting the server to the SAN and performing a verification process.
- Configuring the space on the SAN to comply with the user’s storage request and ensure it is accessible.

Connectivity cost is based on the number of ports used by the server ($1250)

<table>
<thead>
<tr>
<th>(2) 32-port Fiber Switches</th>
<th>$40,000.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of Ports</td>
<td>32</td>
</tr>
<tr>
<td>Cost per Port</td>
<td>$1,250.00</td>
</tr>
</tbody>
</table>

Configuration and Connectivity Fee: $1600.00 per server

Storage

This is a recurring monthly cost based mostly on the amount and type (ATA, FC) of storage you are allocated. The amount of storage is the amount of storage assigned to your system and not necessarily the amount of storage you are currently utilizing. This cost also includes common components such as the chassis or frame that the disk is located in as well as the management software used. This cost is based upon a server accessing the storage and NOT based upon connection i.e. if you are using multiple connections from a single server you still only pay 1 fee.

Storage Costs:

- Storage Cost – Monthly recurring $.29 / Gigabyte ATA
- Storage Cost – Monthly recurring $.38 / Gigabyte Fibre disk
- Storage Management – Monthly recurring $70
SAN Cost Summary

A user department that wanted to attach a server to the UCIT SAN environment could expect the following fees:

1. One-time installation and connectivity fee of $1600.00
2. Variable monthly costs of $.29 or $.38 per/GB of storage used
3. Monthly storage management charge of $70

Example: A department wanting to attach a Windows based, dual HBA, server to the SAN using 100 gigabytes of FC storage space would have the following charges:

| One time Configuration and Connectivity Fee | $1600.00 |
| Monthly Storage Cost                       | $40.00   |
| Monthly Storage Management                 | $70.00   |
| Monthly Total                              | $110.00  |