



UCSB Audit and Advisory Services

Internal Audit Report

**Administrative & Residential Information Technology
Operational Review**

June 7, 2017

Performed by:

Antonio Mañas-Melendez, Principal Auditor
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Approved by:

Jessie Masek, Acting Director

Report No. 08-17-0007

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AUDIT AND ADVISORY SERVICES
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June 7, 2017

To: Ben Price, Director
Administrative & Residential Information Technology, Administrative Services

Distribution

Re: **Administrative & Residential Information Technology Operational Review
Audit Report No. 08-17-0007**

As part of the 2016-17 annual audit services plan, Audit and Advisory Services has completed an audit of Administrative & Residential Information Technology operations; enclosed is the report detailing the results of our work.

The purpose of this project was to evaluate the effectiveness and efficiency of Administrative & Residential Information Technology (ARIT) internal controls to determine whether they are appropriate and consistent with University of California (UC) and University of California Santa Barbara (UCSB) policies and procedures, and best practices. The scope of the audit included evaluating practices in tracking IT equipment inventory and service level management.

The results of our work found that ARIT inventory and service level management practices are overall appropriate and consistent with University policy. However, our work highlighted opportunities for potential improvements in documenting inventory procedures and operations involving tracking and reporting of service level agreements with vendors and establishing metrics and reporting with campus departments.

Detailed observations and management corrective actions are included in the following sections of the report. The management corrective actions provided indicate that each audit observation was given thoughtful consideration, and positive measures have been taken or planned in order to implement the management corrective actions.

We sincerely appreciate the cooperation and assistance provided by Administrative & Residential Information Technology, and Enterprise Technology Services personnel during the review. If you have any questions, please feel free to contact me.

Respectfully submitted,

A handwritten signature in blue ink that reads "Jessie Masek".

Jessie Masek
Acting Director
Audit and Advisory Services

Ben Price, Director, Administrative & Residential Information Technology, Administrative Services
June 7, 2017
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Enclosure

Distribution:

Housing, Dining & Auxiliary Enterprises

Associate Vice Chancellor Housing, Dining & Auxiliary Enterprises Wilfred Brown
Martin Shumaker, Director of Business and Financial Planning

cc: Chancellor Henry Yang
Vice Chancellor Administrative Services Marc Fisher
UCSB Audit Committee
Interim Senior Vice President and Chief Compliance and Audit Officer John Lohse

PURPOSE

The purpose of this project was to evaluate the effectiveness and efficiency of Administrative & Residential Information Technology (ARIT) internal controls to determine whether they are appropriate and consistent with University of California (UC) and University of California Santa Barbara (UCSB) policies and procedures, and best practices. This audit is part of our fiscal year 2016-17 audit services plan.

SCOPE, OBJECTIVES AND METHODOLOGY

The scope of the audit included evaluating practices in tracking IT equipment inventory and service level management.

The objectives of our review were to determine whether:

- ARIT inventory of IT equipment is appropriately documented and updated based on acquisitions and disposals.
- There are formalized service level management processes and controls in place to monitor service quality received from external vendors and provided to campus departments.

To accomplish our objectives, we:

- Reviewed other audits and reviews relevant to this audit, including work by UCSB Audit and Advisory Services and other UC campuses. See Table 1.
- Researched and reviewed UC and UCSB policies, best practices, and other guidance relevant to the scope of the audit.
 - UC Policy BFB-BUS-29, *Management and Control of University Equipment* (BFB-BUS-29).
 - UC Policy BFB-BUS-38, *Disposition of Excess Property and Transfer of University Owned Property* (BFB-BUS-38).
- Gained an understanding of current ARIT department practices and operations through interviews with key staff personnel.
- Performed a risk analysis that considered current department procedures for handling and distributing inventory, service level agreements with external vendors, and campus operational level agreements with internal campus departments.
- Selected a sample of purchases for detailed review of inventory tracking throughout the entire process. This included review of the acquisition, distribution, and disposal of inventory. We also performed a physical validation of the samples based on inventory records, verified whether disposed data was erased, and evaluated current systems for inventory tracking and reporting.

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- Identified and selected major external vendors supplying IT equipment or services for detailed testing, which included reviewing contracts for service quality parameters, penalties for breach, and whether current department processes adequately track incidences through quality control reporting.
- Identified and selected ARIT Service Level Objectives (SLO) to determine whether SLOs have been formalized, are well defined, and there is periodic reporting to departments.

This audit was conducted in conformance with the *International Standards for the Professional Practice of Internal Auditing*.

BACKGROUND

Administrative & Residential Information Technology¹ (ARIT) is responsible for the planning, development, implementation, and overall administration for information systems and related technologies for all departments of the UCSB Division of Administrative Services. The ARIT organization is comprised of the following subgroups:

- **Technical Infrastructure:** The Technical Infrastructure group has responsibility for all technology supporting the server environment, virtual desktop infrastructure, and backup strategy. This group assures that the server and network infrastructure, backup of production data, and disaster recovery practices are optimized to maintain essential business applications.
- **Network & Security:** The Network & Security group provides secure network access using a common architecture, equipment, and processes. This group is directly responsible for all aspects of ResNet, which provides 24/7 wireless and Ethernet connectivity to all UCSB residential customers. The ARIT systems security is managed by a combination of policy, architectural, and training processes. The Network & Security group manages and provides training to a team of network staff and student network consultants to provide assistance with end-user problems, network maintenance and security posturing. The Network & Security group manages the operation and delivery of network services and infrastructure at the datacenter, edge, and virtual levels.
- **Application & End User Support:** The Application & End User Support Group maintains essential business applications. This includes responsibility for all new software systems, including feasibility studies, project planning, timetables and deadlines, relations with software vendors, user training, conversion of processes and procedures, and integration and data exchange with other departmental and campus information systems. This group evaluates and selects tools and methods to create files, extracts, and reports & processes queries from a variety of data sources.

ARIT was originally an IT group limited to providing services to Housing, Dining, & Auxiliary Enterprises. This group soon was established as a center of excellence for the entire UCSB Division of Administrative Services. Through this new role, ARIT faces several challenges in evolving and growing their business operations to accommodate additional responsibilities and servicing a growing number of customers.

¹ ARIT website.

Information Technology Infrastructure Library (ITIL)²

ITIL is a set of detailed practices for IT service management (ITSM) that focuses on aligning IT services with the needs of business, ITIL is published as a series of five core volumes, each of which covers a different ITSM lifecycle stage, including Service Strategy, Service Design (SD), Service Transition, Service Operation, and Continual Service Improvement.

Service Design

SD provides good-practice guidance on the design of IT services, processes, and other aspects of the service management effort. SD packages, along with other information about services, are managed within the service catalogues. Processes covered include:

- Design Coordination
- Service Catalogue Management
- Service-Level Management (SLM)
- Availability Management
- Capacity Management
- IT Service Continuity Management
- Security Management
- Supplier Management

Service Level Management

The SLM process focuses on researching and understanding requirements, including:

- Defining, negotiating, constituting, and documenting IT services.
- Monitoring, measuring, and reporting service provider performance.

Service Level Agreement (SLA)

SLAs provide specific services at a defined level of quality for a specific price. SLAs typically need negotiation of agreements with other internal organizations (OLA's) or external suppliers (underpinning contracts).

Regulations and Policies

Principal regulations, policies, and procedures we considered most relevant to the scope of this audit include:

- BFB-BUS-29, *Management and Control of University Equipment*, establishes inventory and other requirements for property defined as University inventorial equipment, government inventorial equipment, other government property, and other inventorial items. Although there is a general cost threshold of \$5,000 for equipment to be inventoried, the actual requirements depend on the property category and specific requirements to which the property is subject. BFB-BUS-29 also specifies that each University location may establish more restrictive local policies and procedures, for example, for other inventorial items or other items that are theft sensitive.

² Source: Internet including Wikipedia and BMC.

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- BFB-BUS-38, *Disposition of Excess Property and Transfer of University Owned Property*, addresses the disposition of all University-owned personal property (vs. real property) that has been determined to have no continuing value to the University. It includes requirements to ensure the proper protection of, accounting for, and disposition of University-owned excess property, including specifying acceptable methods of disposition and restrictions on the disposition and use of property. BFB-BUS-38 also specifies that each University location may establish more restrictive local policies and procedures.

Table 1		
Relevant Work by UCSB Audit and Advisory Services and Other UC Audit Departments		
Report Name	Date	Campus
Distributed IT	May 2013	UCD
Wilshire Center Operations	July 2014	UCLA
Recharge Operations Advisory Project	February 2016	UCSF
Information Technology (IT) Services Data Center Operations Audit	June 2011	UCLA
IT Operations Assessment	December 2013	UCM

Source: Audit & Advisory Services.

SUMMARY OPINION

The results of our work found that ARIT inventory and service level management practices are overall appropriate and consistent with University policy. However, our work highlighted opportunities for potential improvements in documenting inventory procedures, operations involving tracking and reporting of service level agreements with vendors, and establishing metrics and reporting with campus departments.

Audit observations and management corrective actions are detailed in the remainder of the audit report.

DETAILED OBSERVATIONS AND MANAGEMENT CORRECTIVE ACTIONS

A. IT Equipment Inventory

Our work found opportunities to improve the current inventory process of IT equipment acquired, distributed, and managed by ARIT. There is no consolidated inventory or reporting practices to facilitate timely inventory updates resulting from acquisitions and disposal for department workstations and servers located in campus datacenters. Table 2 summarizes our conclusions. Our detailed testing identified the following:

- Physical inventory is managed independently at each location or department. In addition, ARIT uses an application³ to track all client workstations and ARIT servers connected to the network. Although this software's primary purpose is not for inventory tracking, ARIT relies on this tool to serve as the main source of inventory. However, this tool is not integrated with acquisition and disposal records.
- We also found that inventories of servers located in datacenters have limited information. This record should include more detailed information to allow for better tracking of ARIT assets.
- There are opportunities to improve standard receiving practices. ARIT retained limited shipping documentation, such as packing slips and other receiving documentation for two trial server purchases.
- There are opportunities to improve the distribution approval process of IT equipment to campus departments. ARIT did not retain documentation of the approval to distribute workstations to the departments.
- There is no formal reconciliation and reporting process for acquisitions and disposals of IT equipment in inventory. There is a need for inventory to include additional details to allow for more efficient and comprehensive reporting. For example, we referenced information from the purchase order inventory, workstation inventory, and NHDC inventory, but could not identify details regarding the disposal of hardware related to the workstation.

We recommend Administrative & Residential Information Technology:

- Review and develop inventory records to include enough details to identify workstations and servers throughout the entire acquisition, distribution, and disposal process.
- Develop procedures to document the acquisition, distribution, and disposal process. This could include areas such as the process for receiving special equipment and appropriate approvals.

³ GFI.

Management Corrective Actions

Administrative & Residential Information Technology will:

- Review and develop inventory records to include enough details to identify workstations and servers throughout the entire acquisition, distribution, and disposal process.
- Develop procedures to document the acquisition, distribution, and disposal process. This could include areas such as the process for receiving special equipment and appropriate approvals.

Audit and Advisory Services will follow up on the status of these issues by September 30, 2017.

Table 2	IT Equipment Inventory	
Category	Rating	Comment
Purchase and Acquisition Process	Partial	Limited Tracking with Inventory.
Receiving Process	Partial	Limited Documentation for Two Trial Units.
Distribution Process	Partial	Approvals Not Fully Documented.
Physical Inventory	✓	IT Equipment Located.
Disposal and Destruction Process	Partial	Limited Tracking with Inventory.
Reporting Procedures	Partial	Inventory Reports not Consolidated.

Source: Auditor analysis.
 ✓ = Criteria met best practices.
 Partial = Criteria partially satisfied best practices.
 ✗ = Criteria did not meet best practices.

B. Service Level Management Practices

The results of our work found that ARIT service level management practices are overall appropriate. However, our work highlighted opportunities for potential improvements in operations involving tracking and reporting of service level agreements with vendors, and metrics with campus departments. Table 3 summarizes our conclusions.

Vendor Service Level Agreements

We found that all contracts of our sample included adequate clauses to define and enforce service level agreements with service providers and vendors. However, we did identify some opportunities to improve current tracking and reporting practices to more closely follow best practices. We identified:

- Two vendors provide information related to contractual service level agreements. However, ARIT has not formalized a process to evaluate and report this information due to the low volume of activity.

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- One system-wide vendor is able to provide ad hoc reporting upon request, but ARIT is not currently requesting these reports.

Campus Operational Level Agreements

While we found current practices for campus operational level agreements are adequate, the results of our work highlighted opportunities to formalize campus operational level agreements with campus departments and provide periodic reporting of service quality. Our work identified:

- Campus operational level agreements can be assessed through response time reporting in the isDesk Support system. However, we noted that the system does not provide enough detail to determine if objectives were achieved.
- There is no regular, periodic reports provided to departments.

Table 3 Best Practices for Service Level Agreements		
Category	External¹	Internal²
Formalized and Defined Service Level Agreements / Metrics	✓	Partial
Assessment of Service Level Agreements	Partial	✗
Reporting of Service Level Agreements	✗	✗
Enforcement Service Level Agreements	Partial	N/A

Source: Auditor analysis.
 ✓ = Criteria met best practices.
 ✗ = Criteria did not meet best practices.
 Partial = Criteria partially satisfied best practices.
 1 = Service Level Agreement with service providers and vendors.
 2 = Metrics for end-user support with campus departments.

We recommend Administrative & Residential Information Technology evaluate developing and documenting procedures to:

- Formalize practices for tracking and monitoring service level agreements with vendors and service providers.
- Establish desktop metrics for end-user support and provide regular reporting to campus departments.

Management Corrective Actions

Administrative & Residential Information Technology will evaluate developing and documenting procedures to:

- Formalize practices for tracking and monitoring service level agreements with vendors and service providers.
- Establish desktop metrics for end-user support and provide regular reporting to campus departments.

Audit and Advisory Services will follow up on the status of these issues by September 30, 2017.