COUNTY AUDIT DEPARTMENT

REPORT # 343

An Audit of:

SOFTWARE LICENSING MANAGEMENT

FEBRUARY 21, 2018

February 21, 2018

The Honorable Sandra L. Murman, Chairman
The Honorable Victor D. Crist
The Honorable Ken Hagan
The Honorable Al Higginbotham
The Honorable Pat Kemp
The Honorable Lesley "Les" Miller, Jr.
The Honorable Stacy R. White

Dear Chairman Murman and Commissioners:

The Audit Team performed an audit of the Software Licensing Management (Audit Report # 343, dated February 21, 2018). Responses to the Audit Team's recommendations were received from the Director of the Administrative Systems & Processes Division, Information and Innovation Office (IIO) and have been included in the Report after each audit comment and recommendation.

The purpose of this Report is to furnish management independent, objective analysis, recommendations, counsel, and information concerning the activities reviewed. It is not an appraisal or rating of management.

Although the Audit Team exercised due professional care in the performance of this audit, this should not be construed to mean that unreported noncompliance or irregularities do not exist. The deterrence of fraud and/or employee abuse is the responsibility of management. Audit procedures alone, even when carried out with professional care, do not guarantee that fraud or abuse will be detected.

The Audit Team appreciates the cooperation and professional courtesies extended to the auditors by the Director and personnel of the Information and Innovation Office during this audit.

Sincerely,

Heidi Pinner, CIA, CISA, CRMA, CFE
Director of County Audit

CC: Mike Merrill, County Administrator
      Ramin Kouzehkanani, Chief Information & Innovation Officer
      Axel Clauberg, Administrative Systems & Processes Division Director
      Kevin Brickey, Management & Budget Office
      Dan Klein, Chief of Staff
      Rick VanArsdall, Chief Deputy, Finance, Clerk to the Board

TABLE OF CONTENTS

EXECUTIVE SUMMARY

BACKGROUND INFORMATION

The County uses many types of computer software applications to accomplish daily tasks. Most computer software is governed by a legal instrument called a software license. The software license grants rights to the user and indicates the terms of how it can be used, such as the number of installations allowed.

Hillsborough County Administrative Directive # IT-01, *Automation and Telecommunications* (the Directive), defines policies and procedures for the County's acquisition and use of automation and telecommunications equipment, the acquisition, development and use of computer software, and the acquisition, use and management of automation related services. The Directive assigns responsibility to the individual department directors for managing licenses. It also indicates which type of licenses the Information and Innovation Office (IIO) is responsible for managing.

OBJECTIVE

The objective of the audit was to determine whether or not the IIO has adequate controls in place to ensure that all County software is appropriately licensed and utilized.

SCOPE

The audit was conducted in conformance with the *Generally Accepted Government Auditing Standards* and the *International Standards for the Professional Practice of Internal Auditing*. These Standards require that County Audit plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for the audit comments and conclusions based on the audit objectives. County Audit believes that the evidence obtained provides this reasonable basis.

The audit scope included software programs installed on County devices as of August 14, 2017. The Audit Team selected a sample of the three departments with the highest number of applications for testing. The Audit Team assessed the controls within each of these departments to record and maintain installed software licenses. The departments included were Public Utilities, Development Services, and Public Works.

OVERALL EVALUATION

The employees of the IIO were responsive to the Audit Team's inquiries and provided the information requested in a timely and polite manner. The Audit Team encountered knowledgeable and dedicated employees during the course of the audit.

The following table summarizes the audit comments and corresponding cross references to the page number where the audit comment details can be found in this Report.

AUDIT COMMENT	CONCLUSION OF OBJECTIVE	PAGE
1	There is an opportunity to improve the procedures for recording and managing software licenses within County departments.	3
2	Opportunities exist to improve internal controls surrounding enterprise software license management.	6

OPINION

The overall control environment relative to the management of software licenses is at a repeatable maturity level. This means that management has controls established with some policy structure which ensures that the software licensing management process is carried out in an appropriate manner. Some software license maintenance exceptions were noted and opportunities were identified to strengthen the controls related to formal process documentation, enhanced monitoring and periodic reviews. Addressing these opportunities will enhance the overall control structure and provide increased consistency and assurance.

The exit conference was held on January 23, 2018.

Other minor concerns not included in this Report were communicated to management and/or corrected during fieldwork.

AUDITED BY

Heidi Pinner, CIA, CFE, CISA, CRMA, Director of County Audit
Ben Everett, CPA, CIA, CFE, Audit Manager
Raul Cardona, CIA, CISA, CAMS, Senior Internal Auditor

AUDIT COMMENTS & RECOMMENDATIONS

AUDIT COMMENT 1

There is an opportunity to improve the procedures for recording and managing software licenses within County departments.

The objective was to determine whether or not there are controls in place to ensure that software licenses are properly recorded and maintained within individual County departments. Public Utilities, Development Services, and Public Works were each selected for testing.

The Audit Team performed the following audit procedures:

1. Met with each department's process owner.

2. Inquired about the procedures to record and monitor software licenses.

3. Selected a random sample of 60 applications (20 applications for each area) installed on County computers and requested each respective process owner to provide the proofs of purchase and/or the software license numbers for each of the applications included in the sample.

4. Performed testing of the security policy in place which restricts employees from installing software on County computers. The Audit Team randomly selected a total of six employees (two individuals from each department) and requested them to install a free application from the internet. The Audit Team then observed if the security controls would block their access to install the application on their computers.

Testing Results

Based on the audit tests performed:

1. No formal process or consistency exists across County departments regarding the procedures to record and monitor software licenses. For newly acquired computers, there are instances of departments having to re-purchase the same software due to not maintaining the license from the first time it was purchased.

2. For the sample of 60 applications installed on County computers:

   - 19 (32%) software license numbers and 30 (50%) proofs of purchase were maintained. The remaining 41 (68%) software license numbers and 30 (50%) proofs of purchase were not maintained.

   - 21 (35%) of these applications were missing both the software license numbers and the proofs of purchase.

3. The system appropriately blocked each individual's attempt to download and install free applications from the internet.

RECOMMENDATIONS

Management should consider implementing a comprehensive and consolidated control structure for the acquisition, tracking and management of all County applications.   A consolidated control structure could increase compliance, improve management decision making processes and reduce costs by:

- Providing more information related to the types of software the County has licensed, deployed or in use.

- Preventing instances of applications needing to be re-purchased during computer life-cycle replacements.

- Indentifying instances of excess software licenses.

- Automating software license renewal processes.

- Ensuring compliance with licensing terms and conditions.

- Reducing the possiblity of license renewals or software updates from disrupting other applications or processes.

Specifically, a consolidated control structure should include or address:

- Implementation of a centralized license management process assigning specific ownership and responsibilities related to software acquisitions, deployment, maintenance, and licensing.

- Utilization of a software license management tool capable of maintaining a database of IT software assets, corresponding license numbers, and software owners across multiple departments. Ideally this tool would also have the ability to catalog how the applications interact with one another and with the network.

- A formal and routine monitoring process developed for application licensing, utilization and compliance.

CLIENT RESPONSE

- *Concur*

CORRECTIVE ACTION PLAN

- *IIO will submit a FY19 Decision Unit for approval to fund:*

  - *A software license management tool capable of maintaining a database of IT software assets, corresponding license numbers, and software owners across multiple departments.*

  - *One new FTE position to perform centralized procurement for all BoCC Departmental software purchases, perform internal software license auditing, and maintain the software asset database information related to software acquisitions, deployment, maintenance, and licensing.*

- *Upon approval and funding of the referenced FY19 Decision Unit, IIO will:*

  - *Procure, implement and configure the software license management tool.*

  - *Develop a centralized BoCC County-wide software license management policy/process that assigns specific ownership and responsibilities related to software acquisitions, deployment, maintenance, and licensing.*

  - *Begin centralized procurement for all BoCC Departmental software purchases.*

  - *Perform formal and routine internal software license auditing/compliance monitoring, and maintain the software asset database information related to software acquisitions, deployment, maintenance, and licensing.*

TARGET COMPLETION DATE

- *Comply by 9/30/2019.*

AUDIT COMMENT 2

Opportunities exist to improve internal controls surrounding enterprise software license management.

The objective was to determine whether or not controls are in place to ensure that enterprise-wide software licenses are appropriately managed by the IIO.

Ninety days before the renewal of enterprise-wide software licenses, the IIO runs an inventory scan of computer systems and software as part of the IIO yearly system true-up and renewal process.   The IIO then compares current inventory results to the number of licenses purchased/renewed from the previous year to determine whether or not additional licenses must be paid for.

The Audit Team selected the following systems to perform testing of respective license true-up processes and vendor payments:

1. Windows and Microsoft Office

2. Symantec (anti-virus software)

3. Oracle E-Business Suite

The Audit Team obtained and reviewed the last three years (2015, 2016 and 2017) of supporting documentation for each of the true-up processes performed to ensure that procedures were completed on a yearly basis and that corresponding vendor payments were processed in accordance with the true-up process amounts.

In addition, the Audit Team performed a test of all the administrative user accounts (Liaison Group list) with access privileges to install software/applications on County computers by:

- Comparing all 176 administrative user accounts included in the Liaison Group list to the County Active Employees list, to review for user access appropriateness.

- Selecting a random sample of 30 administrative user accounts from the Liaison Group list and requesting management to provide the "Local Desktop Administrator Access Request Form" for each user in the sample to determine whether or not administrative system access privileges are being properly requested, documented and authorized by management.

Testing Results

All license true-up processes reviewed for the three (3) enterprise-wide licenses in scope were performed and license fees were paid to the respective software vendors. While reviewing the supporting invoices and payments, the Audit Team noted that the results of the inventory scans

and other supporting license documentation was not maintained. As a result, the Audit Team was unable to verify whether or not the proper number of additional licenses was purchased.

Out of a population of 176 administrative user accounts included in the Liaison Group list:

- 132 (75%) user account names had a matching name in the County Active Employee List.

- 18 (10%) user account names did not belong to an active County employee (not found).

- 20 (11%) user accounts were identified as generic or testing accounts.

- Six (4%) user accounts appear to be duplicates (two user accounts belonging to the same employee).

- 12 (40%) out of the 30 administrative user accounts selected in the sample did not contain the appropriate access approval form on file.

RECOMMENDATIONS

The Information and Innovation Office should consider the following to enhance the controls over the enterprise-wide true-up process and administrative user accounts in the Liaison Group:

- Ensure that all the documentation used to complete the license true-up processes, including network scanning procedures and source information to support user counts, is recorded and maintained.

- Perform a periodic review of the list of administrative user accounts (Liaison Group list) to ensure appropriateness of the employees with administrative access rights.

- Ensure that a "Local Desktop Administrator Access Request Form" is properly received, approved and maintained for all administrative user accounts.

- Update Administrative Directive IT-01 to reflect the IIO's current process to comply with the Directive's requirement that the IIO provide the departments with quarterly software reports.

CLIENT RESPONSE

- *Concur*

CORRECTIVE ACTION PLAN

- *IIO will develop and implement a procedure to ensure that all the documentation used to complete the license true-up processes, including network scanning procedures and source information to support user counts, is recorded and maintained.*

- *IIO will develop and implement a procedure to perform a periodic review of the list of administrative user accounts to ensure appropriateness of the employees with administrative access rights.*

- *IIO will review and update procedure(s) associated with the "Local Desktop Administrator Access Request Form" to ensure it is properly received, approved and maintained for all administrative user accounts.*

- *IIO will update Administrative Directive IT-01 to reflect IIO's process to comply with the Directive's requirement that the IIO provide the departments with quarterly software reports.*

TARGET COMPLETION DATE

- *Comply by 1/31/2019.*