DIVISION OF LOCAL GOVERNMENT AND SCHOOL ACCOUNTABILITY

REPORT OF EXAMINATION | 2020M-59

Liverpool Central School District

Information Technology Assets

JULY 2020

Contents

Report Highlights

Audit Objective

Determine whether the District effectively managed hardware and software inventory to ensure that information technology (IT) assets are safeguarded.

Key Findings

District officials did not maintain complete and accurate hardware or software inventory records and did not perform comprehensive inventory counts.

- Our review of 529 purchased items, totaling about $448,000, found that 123 items, totaling $76,425, were not recorded in the District's inventory records.

- Officials could not locate three of the 48 IT items we tested: a laptop and two cameras, totaling $1,444.

- The last comprehensive physical inventory count was conducted in 2003.

District officials cannot be assured that IT assets are adequately accounted for and protected from loss, theft, misuse and obsolescence.

Key Recommendations

- Ensure IT inventory records include the necessary detail for recording IT purchases and tracking hardware assets.

- Maintain a complete, comprehensive software inventory and applicable licenses.

- Perform physical inventories of hardware and compare them to inventory records, and review software installed on District computers.

District officials agreed with our recommendations and indicated they planned to initiate corrective action.

Background

The Liverpool Central School District (District) serves the Towns of Clay and Salina in Onondaga County.

The District is governed by the Board of Education (Board) which is composed of nine elected members. The Board is responsible for the general management and control of the District's financial and educational affairs. The Superintendent of Schools (Superintendent) is the District's chief executive officer and is responsible, along with other administrative staff, for the District's day-to-day management under the Board's direction.

The District's Technology Director (Director), who manages five technology department staff and a secretary, is responsible for ensuring the District's hardware and software inventory records are properly maintained.

Quick Facts	
Employees	1,559
Enrollment	6,888
2019-20 Appropriations	$160 million
IT Equipment Purchases During Audit Period	$1,542,803

Audit Period

July 1, 2018 – November 30, 2019

IT Asset Inventory

How Should a District Maintain Its Hardware Inventory?

The evolution of IT in the classroom has prompted large increases in school districts' IT hardware investments. Maintaining accurate records of IT assets allows school district officials to know what equipment a district has, where the equipment is located and how much the equipment cost.

The Board is responsible for establishing policies and procedures which are part of the internal control structure in providing criteria and guidance over the District's hardware inventory. An IT management system should identify and track an IT asset through its life cycle, including acquisition, identification, use and disposal. District officials must ensure that the District's computer assets are physically secured and tracked by maintaining a comprehensive, accurate inventory record that is periodically reviewed and updated. A detailed inventory record should include a description of each item, including make, model and serial number; the name of the person to whom the equipment is assigned, if applicable; the physical location of the asset; and relevant purchase information including acquisition date and cost. Each item also should be immediately affixed with an identification tag and entered into a consolidated inventory record upon receipt. Inventory records should be updated when assets are disposed of and equipment should be periodically inventoried to establish condition and to ensure none has been misplaced or stolen.

Officials Did Not Maintain an Accurate and Complete Inventory of Hardware Assets

The District maintains a central inventory of all IT assets, including computers and computer-related equipment listing approximately 30,200 items on hand as of November 2019. The Director and IT specialists told us all members of the Department are involved in the inventory process which includes tagging newly purchased computer equipment, adding them to the central inventory and updating the record of any changes. The Department also maintains two supplemental hardware inventories including a list of 751 laptops issued to teachers and a list that includes 4,967 laptops issued to students.[1] Officials told us that the central inventory is intended to include a comprehensive inventory of all the District's hardware.

We found the District's hardware inventory records were not accurate, complete or up to date. District officials also did not have effective procedures in place for adding new hardware assets to inventory records and for recording surplus or damaged items that were approved for disposal.

The District's hardware inventory records were not accurate, complete or up to date.

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1   These supplemental lists show who the laptops are assigned to, but do not include other information such as purchase price and acquisition date.

- Incomplete and Inconsistent Records – Although the central inventory record indicated the manufacturer, model, identification tag number and classification status[2] for each item, about half of the assets listed lacked details such as the acquisition date, cost and the details necessary to track and locate the asset. For example, over 3,500 assets had no building location and, most often, no identifiable room number or specific location other than the building (if available). We also found significant inconsistencies between the central inventory record and the supplemental inventory lists. For example, 1,733 laptops were recorded in the Department's inventory records of laptops issued to students but not recorded in the central inventory record.

- Asset Additions – We identified over 5,240 computer and computer-related equipment assets that were purchased during our audit period. These items cost about $1.5 million. We attempted to trace 529 assets[3] totaling $448,017 to the District's inventory records. However, 123 assets (23 percent) totaling $76,425 were not reflected in the District's inventory records. These assets included desktops, laptops, printers, projectors and cameras. We also selected 48 of the 529 sampled assets[4] totaling $62,186 and attempted to physically locate the assets. A desktop and two cameras with a combined cost of $1,444 could not be found.

- Asset Disposals – During the audit period the Board approved the disposal of 1,059 hardware assets. We examined the District's inventory records to confirm the assets were properly recorded as disposed. We found 40 of the 1,059 items (4 percent) were properly classified. However 789 assets were still recorded as deployed or in service and 230 assets that were never recorded in the District's inventory system.

District officials[5] told us IT equipment purchases generally require the Director's approval. However, some purchases lacked his approval. According to the Director and other IT specialists, when the IT Department is not notified of a hardware purchase, the assets are not entered into the inventory records. Officials also told us it was an oversight that information such as cost, acquisition date and location were not consistently recorded in the central inventory records, and that disposed assets were not correctly classified. They also explained that information such as cost, acquisition date and location may be obtained from other in-house sources, but agreed that a comprehensive record would be beneficial.

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2 For example, deployed, surplus, in repair, spare, for parts

3 See Appendix B, Audit Methodology and Standards, for details on sample selection.

4 Ibid.

5 The IT Director, School Purchasing Officer, and Director of School Business Administration

Department staff also told us that they perform an inventory of laptops issued to teachers and students each year, but a comprehensive physical inventory of other hardware was last performed in 2003. As a result, the District has no process in place to detect errors or inaccuracies in its hardware inventory records and cannot ensure all assets are properly accounted for. These deficiencies occurred, in part, because the Department does not have written procedures requiring the specific information to be entered into the central inventory records, tagging assets when received, updating the inventory record for disposals, and performing periodic physical inventories.

Without a complete and accurate inventory of computers and other technology assets, District officials cannot be assured that these assets are adequately accounted for and protected from loss, theft, misuse and obsolescence. Further, they do not have enough information to make informed decisions on hardware inventory. Further, in the event of a disaster, the District would be unable to provide its insurance company with an accurate list of assets to replace.

How Should a School District Maintain Its Software Inventory?

Software management is of particular importance to larger entities such as schools that have different users who perform a variety of functions. Typically, schools have several software applications and multiple licenses for each. Maintaining complete and comprehensive software inventory records is crucial in safeguarding IT assets from loss or theft, tracking the installation of unauthorized and unlicensed software being installed on district computers, avoiding fines for unlicensed software installations and ensuring software patches[6] are applied to all installed software. As a best practice, officials should ensure that software inventory records include all District-owned software installed on computers and the number of copies and version currently in use.

Furthermore, the software inventory records should be used to regularly review all computers used by the District to ensure that all software programs installed are properly licensed and approved and that District staff is in compliance with the District's acceptable-use policy.[7] District officials should ensure that only appropriate business or academic software is installed to reduce the risk of unwanted consequences that could result from unauthorized and unpatched software. This can be done, in part, by regularly reviewing computers to identify installed software and taking action to remove any unauthorized software and apply patches to remove known software vulnerabilities.

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6 A patch can be an upgrade (adding features), computer bug fix, new hardware driver installation or an update to address new issues.

7 The District developed acceptable-use policies to provide employees with guidelines for IT asset use and security. The policy allows the installation of only District-approved software. According to the Director, his Department is responsible for approving the software.

Officials Did Not Maintain Adequate Software Inventory Records

The Department maintains an inventory record of Department-approved software applications (District-owned software and approved free downloadable software). The Department's inventory record tracks the license renewal costs and due date for each software application by fiscal year for District-owned software; however, the records were incomplete. Specifically, 15 of the 67 software applications requiring a license and tracked by the Department did not have the number of available licenses recorded or documented. District officials also did not maintain a report or inventory of installed applications and the specific computers on which they were installed. Furthermore, there was no regular review of the installed software to determine whether the applications were supported by a license and were for an appropriate purpose.

We reviewed 30 District computers[8] to determine whether the software installed was authorized and properly supported with a valid license or other documentation,[9] when required, and did not identify any inappropriate programs.

We found that 110 different software applications were installed in addition to the pre-loaded applications that came with the computers and applications when purchased. Of these, 40 applications required a license and were properly licensed, and 70 were freely obtained.

Although all 110 applications required departmental approval before installation, 79 were installed without approval. A total of 31 applications were included in the District's software inventory record.

Additionally, 14 of the 79 unapproved applications were licensed applications, but with no record of available licenses in the Department's inventory. While the District has enabled controls to prevent users from downloading software without administrative permissions[10] to do so, unauthorized software was still installed on District computers.

Because District officials did not maintain a complete, comprehensive and centralized inventory of installed software, including applicable licenses, and perform regular reviews of District computers, they cannot ensure that the software programs were authorized by IT management and licenses were legally obtained. Further, without a complete and accurate software inventory the District cannot ensure security patches are properly installed. When patches are not installed, known software vulnerabilities could be exploited resulting in a data breach or compromised IT system.

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8   See Appendix B, Audit Methodology and Standards, for details on sample selection.

9   If a license key was not on file, we reviewed other available proof of purchase (such as purchase orders, receipts or similar documentation, or purchase history on the vendor's website).

10   Administrative permissions were given to Department staff and a select group designated by the Department.

What Do We Recommend?

The Director should:

1. Ensure the District's inventory records include the detail necessary to adequately track and locate a hardware item, including cost, acquisition date, building location and, if applicable, identifiable room number or specific location.

2. Ensure that purchases of hardware are recorded in the inventory systems and the individual items listed in the central inventory record include the correct classification status.

3. Develop departmental written procedures providing staff with criteria and guidance over the District's hardware such as requiring the specific information for entry into the central inventory records, tagging of items when received, updating the inventory record for disposals and performing periodic physical inventories.

4. Ensure that physical inventory counts are conducted and compared to inventory records, and take appropriate action to follow up on differences.

5. Maintain a complete, comprehensive software inventory list of all District-approved programs installed on computers including applicable licenses.

6. Develop procedures to perform periodic reviews of software installed on District computers and compare results to the Department's approved software inventory list.

District officials should:

7. Ensure that purchases of IT equipment are approved by the Director and that the IT Department receives all the necessary purchasing information for updating the hardware inventory records.

Daniel Farsaci
Director of Technology

June 11, 2020

Office of the New York State Comptroller
Division of Local Government & School Accountability
PSU – CAP Submission 110 State Street, 12th Floor Albany, NY 12236

RE: Liverpool Central School District
        Report of Examination 2020M-59 Response/CAP

To Whom it May Concern:

This letter serves as the official response and Corrective Action Plan (CAP) by Liverpool Central School District to the Report of Examination 2020M-59 that was prepared by the Office of the NYS Comptroller covering the period from July 1, 2018 through November 30, 2019.

The audit objective was to determine if the district effectively managed the hardware and software inventory to ensure IT assets were safeguarded and accounted for. The Liverpool Central School District does not dispute the findings.

Hardware

Findings: **Officials Did Not Maintain an Accurate and Complete Inventory of Hardware Assets**

The District maintains a central inventory of all IT assets, including computer-related equipment listing approximately 30,200 items on hand as of November 2019. The Director and IT specialists told us all members of the Department are involved in the inventory process which includes tagging newly purchased computer equipment, adding them to the central inventory and updating the record of any changes. The Department also maintains two supplemental hardware inventories including a list of 751 laptops issued to teachers and a list that includes 4,967 laptops issued to students. Officials told us that the central inventory is intended to include a comprehensive inventory of all the District's hardware.

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We found the District's hardware inventory records were not accurate, complete or up to date. District officials also did not have effective procedures in place for adding new hardware assets to inventory records and for recording surplus or damaged items that were approved for disposal.

Response and Remedial Action: The District does not dispute the findings.

As part of the Corrective Action Plan, the District has developed a document that will accompany each purchase. This document provides a checklist of information that must be added to the database, initialed once done, and routed to all impacted individuals and then filed in the IT office. In addition, the Department has created a new ▇▇▇▇▇▇ database that will be used to maintain a complete inventory, automatically change the status to disposed when an item is excised, and provide a single database to manage district assets. The IT Department will also be conducting a comprehensive inventory of all technology and will compare this with the current inventory and purchase records.

From this point forward, all IT related purchases are to be approved by the Director of Technology (DOT). The District Purchasing Officer will only purchase IT-related items with the approval of the DOT. All district personnel will be notified of this process.

Software

Findings: Officials Did Not Maintain Adequate Software Inventory Records

The Department maintains an inventory record of Department-approved software applications (District-owned software and approved free downloadable software). The Department's inventory record tracks the license renewal costs and due date for each software application by fiscal year for District-owned software; however, the records were incomplete. Specifically, 15 of the 67 software applications requiring a license and tracked by the Department did not have the number of available licenses recorded or documented. District officials also did not maintain a report or inventory of installed applications and the specific computers on which they were installed. Furthermore, there was no regular review of the installed software to determine whether the applications were supported by a license and were for an appropriate purpose.

Response and Remedial Action: The District does not dispute the findings.

As part of the CAP, the District will research, purchase, and utilize software that enables the IT Department to scan network drives for a comprehensive list of all software installed on district-owned computers. This list will be compared with purchased software records and the approved software list, to determine specific numbers of licensed software installed, licenses remaining, and freely downloadable software applications. Software that is not approved will be evaluated and, if approved, will be added to the approved list. If the software is not approved it will be removed from the devices. This review will be conducted annually by members of the IT Department.

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The IT Department will also modify the software request form to include extensions, this document will be used by district personnel to request new software and extensions and to assist in maintaining the comprehensive inventory list. This process will be communicated to all district personnel. The District will publish a list of approved software for all devices including ███████ ██████████ .

Summation

Beginning in December 2018, the IT department began reviewing various areas that needed improvement and had begun making changes to specific areas. As a result of the review, the IT department has begun to make changes to processes that will enable the department to improve upon the way hardware and software are purchased, tagged, inventoried, distributed, and disposed of. In addition, the department is making changes to the way software is purchased, reviewed, and inventoried. These changes will allow for a much more organized and efficient process for managing devices and software.

We would like to take this opportunity to thank the auditors for working with us to improve processes here in the District. The Technology Team and the District appreciate the professionalism and dedication to making this experience beneficial to all of us.

Lastly, if there are any questions or concerns please do not hesitate to contact me. We as a district take fiscal responsibility very seriously and will work diligently to make sure we have addressed all of the concerns listed in the review.

Thank you again for your work on this.

Daniel Farsaci
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Appendix B: Audit Methodology and Standards

We conducted this audit pursuant to Article V, Section 1 of the State Constitution and the State Comptroller's authority as set forth in Article 3 of the New York State General Municipal Law. To achieve the audit objective and obtain valid audit evidence, our audit procedures included the following:

- We reviewed Board policies and procedures and interviewed District officials and staff to gain an understanding of the process used for maintaining the inventory of District IT assets.

- We used our professional judgment to select 57 invoices, comprising 529 computer and computer-related equipment assets, from 69 IT-related invoices for review. We selected all 224 IT assets directly purchased by the District, costing $160,912. We also selected a sample of 305 IT assets, costing $287,105, which the District procured through the local Board of Cooperative Educational Services. We judgmentally selected these assets with no expectation of more or fewer exceptions. We documented important identification information for each of the IT assets contained in each purchase, and attempted to trace the IT assets to the District's inventory records. Of the 529 items, we used our professional judgment to select 48 items to physically locate the IT asset. This sample included assets that were recorded and not recorded in the inventory records, and which represented a variety of vendors and a range of prices. We selected these assets with no expectations of more or fewer exceptions.

- We reviewed Board meeting minutes and identified all IT inventory assets that the Board approved for disposal, which occurred in March and June 2019. We traced the hardware assets listed in the minutes, by description, serial number and tag number, to District inventory records to determine whether the disposals were recorded.

- We obtained the District's staff directory and used our professional judgment to select a sample of 30 District computers to examine. From the directory, we selected employees located at the District office and high school. Of the 30 computers, 27 were assigned to a principal, teacher, librarian, secretary or clerk; and three were located in the computer lab. Using specialized audit software, we obtained a list of all software installed on each selected computer to determine whether it was included in the Department's list of approved software. We also reviewed the installations for licensing requirements and examined license agreements, purchase orders, invoices and the District's purchase history on vendor websites to determine whether the District maintained proper licensing for the software installed on each of the computers reviewed.

We conducted this performance audit in accordance with generally accepted government auditing standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective.

Unless otherwise indicated in this report, samples for testing were selected based on professional judgment, as it was not the intent to project the results onto the entire population. Where applicable, information is presented concerning the value and/or relevant population size and the sample selected for examination.

The Board has the responsibility to initiate corrective action. A written corrective action plan (CAP) that addresses the findings and recommendations in this report must be prepared and provided to our office within 90 days, pursuant to Section 35 of General Municipal Law, Section 2116-a(3)(c) of New York State Education Law and Section 170.12 of the Regulations of the Commissioner of Education. To the extent practicable, implementation of the CAP must begin by the end of the next fiscal year. For more information on preparing and filing your CAP, please refer to our brochure, *Responding to an OSC Audit Report*, which you received with the draft audit report. The CAP should be posted on the District's website for public review.

Appendix C: Resources and Services

Regional Office Directory
www.osc.state.ny.us/sites/default/files/local-government/documents/pdf/2018-12/regional_directory.pdf

Cost-Saving Ideas – Resources, advice and assistance on cost-saving ideas
www.osc.state.ny.us/local-government/publications?title=&body_value=&field_topics_target_id=263196&issued=All

Fiscal Stress Monitoring – Resources for local government officials experiencing fiscal problems
www.osc.state.ny.us/local-government/fiscal-monitoring

Local Government Management Guides – Series of publications that include technical information and suggested practices for local government management
www.osc.state.ny.us/local-government/publications?title=&body_value=&field_topics_target_id=263206&issued=All

Planning and Budgeting Guides – Resources for developing multiyear financial, capital, strategic and other plans
www.osc.state.ny.us/local-government/resources/planning-resources

Protecting Sensitive Data and Other Local Government Assets – A non-technical cybersecurity guide for local government leaders
www.osc.state.ny.us/sites/default/files/local-government/documents/pdf/2020-05/cyber-security-guide.pdf

Required Reporting – Information and resources for reports and forms that are filed with the Office of the State Comptroller
www.osc.state.ny.us/local-government/required-reporting

Research Reports/Publications – Reports on major policy issues facing local governments and State policy-makers
www.osc.state.ny.us/local-government/publications?title=&body_value=&field_topics_target_id=263211&issued=All

Training – Resources for local government officials on in-person and online training opportunities on a wide range of topics
www.osc.state.ny.us/local-government/academy

Contact

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