



City of New York

OFFICE OF THE COMPTROLLER

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FINANCIAL AUDIT

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Deputy Comptroller for Audit

Audit Report on the Department of
Education's Oversight of Computer
Hardware Purchased through the Apple
Inc. and Lenovo Inc. Contracts

FM14-057A

December 1, 2014

<http://comptroller.nyc.gov>



THE CITY OF NEW YORK
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NEW YORK, NY 10007

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December 1, 2014

To the Residents of the City of New York:

My office has audited the New York City Department Education (DOE) to determine whether DOE properly accounted for computer hardware purchased through contracts it has with Apple and Lenovo. We audit City operations such as this as a means of increasing accountability and ensuring that City resources are used effectively, efficiently and in the best interest of the public.

The audit found that DOE's controls and management over its computer hardware have been insufficient to ensure that it properly accounts for all items purchased. DOE does not maintain a centralized inventory of computer hardware purchased from Apple and Lenovo. Further, DOE does not reconcile the individual DOE sites' inventory records with its Asset Management System (AMS), the database used by DOE to record computer hardware delivered to DOE. Consequently, information in AMS is unreliable and fails to properly identify where all of the computers paid for by DOE are located.

The audit recommends that DOE maintain a centralized inventory system for computer hardware; routinely monitor its related recordkeeping procedures; determine the physical location of the 1,817 computers that could not be located during our audit; conduct a system-wide inventory count and reconciliation of DOE data; refer evidence of misconduct in connection with the purchase, receipt and usage of computer equipment to appropriate authorities; instruct schools to identify unused computer hardware in their inventory records; and transfer unused hardware to locations where it is needed.

The results of the audit have been discussed with DOE officials, and their comments have been considered in preparing this report. Their complete written responses are attached to this report.

If you have any questions concerning this report, please e-mail my audit bureau at audit@comptroller.nyc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott M. Stringer".

Scott M. Stringer

TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
Audit Findings and Conclusion	1
Audit Recommendations.....	1
Agency Response.....	2
AUDIT REPORT	4
Background	4
Objectives	5
Scope and Methodology Statement.....	5
Discussion of Audit Results	5
FINDINGS AND RECOMMENDATIONS	7
Inaccurate and Incomplete Inventory Lists	7
Computers Not Found at Designated Locations	9
Lack of Oversight over Tablet Computers.....	11
Underutilized Computer Hardware at Schools	12
Recommendations.....	13
DETAILED SCOPE AND METHODOLOGY.....	16
ADDENDUM – DOE Response	17

THE CITY OF NEW YORK OFFICE OF THE COMPTROLLER FINANCIAL AUDIT

Audit Report on the Department of Education's Oversight of Computer Hardware Purchased through the Apple Inc. and Lenovo Inc. Contracts

FM14-057A

EXECUTIVE SUMMARY

This audit of the New York City Department of Education (DOE) focuses on the controls and management DOE has had over two contracts for the purchase of computer hardware for use by students, teachers, and administrative staff. One contract with Apple, Inc. (Apple) was entered into on September 1, 2009, and one with Lenovo, Inc. (Lenovo) was entered into on July 1, 2011. As of September 2014, DOE spent approximately \$197.1 million, which included \$96.8 million on the Apple contract and \$100.3 million on the Lenovo contract.

Audit Findings and Conclusion

DOE's controls and management over its computer hardware have been insufficient to ensure that it properly accounts for its computer hardware. DOE does not maintain a centralized inventory of computer hardware purchased from Apple and Lenovo. Further, DOE does not reconcile the individual DOE sites' inventory records with its Asset Management System (AMS), the database used by DOE to record computer hardware delivered to DOE. Consequently, information in AMS is unreliable and fails to properly identify where all of the computers paid for by DOE are located. In an initial reconciliation of two AMS lists of computers supposedly delivered to a single location, 1,044 items were listed in AMS as "Asset Location Unknown." An additional 46 items were unaccounted for entirely. Further, inventory counts at nine other sampled locations (eight schools and the administrative office at 52 Chambers Street) found that an additional 727 pieces of computer hardware were missing entirely from the locations they were supposed to be at as identified in AMS. Finally, in inspections of the eight schools that auditors chose as sampled locations, we also found that 394 pieces of computer hardware still packed and unused.

Audit Recommendations

1. DOE should have a centralized inventory system for computer hardware that includes purchase and delivery information as well as current location. DOE should explore using its existing AMS system for this purpose.

2. DOE should revise its Standard Operating Procedures (SOP) to include the following:
 - Ensure that all computer hardware purchases, including tablets and netbooks, are included in AMS;
 - Require all schools and administrative sites to conduct annual inventory counts and submit the results of their annual inventory counts to a central administrative unit charged with tracking all computer inventory and maintaining a comprehensive and accurate inventory of all DOE computer hardware;
 - Reconcile the results of inventory counts with the information in AMS to ensure information in AMS is accurate and up to date; and
 - Require all schools and administrative sites to include tablets and netbooks in the annual inventory count.
3. DOE should routinely monitor recordkeeping procedures for computer hardware at DOE sites to ensure that accurate and complete inventories are maintained.
4. DOE should determine the physical locations of the 1,817 computers (1,090 computers from discrepancies identified between AMS lists and the 727 computers) that could not be identified during our physical inventory counts.
5. DOE should conduct a system-wide inventory count and reconciliation of DOE data to determine if other computers are not properly accounted for.
6. DOE should refer evidence of misconduct in connection with the purchase, receipt and usage of computer equipment to appropriate authorities, including law enforcement in the case of evidence of potential criminal activity.
7. DOE should instruct schools to identify unused computer hardware in their inventory records.
8. DOE should transfer unused hardware to locations where it is needed.

Agency Response

DOE disagreed with the audit's findings and with 6 of the 8 recommendations. Furthermore, DOE maintains that "[T]he Comptroller did not investigate DOE's actual inventory process and as a result the audit provides an incomplete and uneven account of the location of equipment purchased by the DOE." DOE also questioned the auditors' methodology and asserted that "[a]n audit with the stated purpose of seeking all items listed in AMS is incomplete without reviewing the POs to identify the delivery location. This being said, the auditors audit testing methodology still relied on physically confirming the location of equipment based upon the location of the purchaser, instead of, say, delivery location, a more reasonable starting point. With this flawed methodology, the audit team faced a number of hurdles that led to incomplete information being included in the Report." Additionally, DOE stated that "The DOE does not agree that a single centralized inventory system is cost effective or practical."

We strongly disagree with DOE's position. While DOE asserts that it is able to account for equipment purchased without reconciling purchases to individual site-based inventory records, the fact remains that even with months in which to do its research, DOE was unable to identify the locations of many of the computers selected for review in our audit. In addition, in its response, DOE asserted that it had located computers. However, in making this claim, it failed

to present any corroborating documentation. Finally, since AMS has the capability of tracking the location of computers, we urge DOE to reconsider the cost effectiveness of DOE's utilization of AMS for that purpose, particularly in light of the findings of this audit.

These arguments and our rebuttal are discussed in greater detail in this report.

AUDIT REPORT

Background

DOE entered into two contracts for the purchase of computer hardware for use by students, teachers, and administrative staff, one with Apple on September 1, 2009, and one with Lenovo, on July 1, 2011.¹ These two City-funded contracts were procured using the New York State Office of General Services Centralized Contracts prequalified list. The total amount of the two contracts was \$187 million, \$83.7 million for the Apple contract and \$103.3 million for the Lenovo contract.² As of September 2014, DOE spent approximately \$197.1 million, which included \$96.8 million on the Apple contract³ and \$100.3 million on the Lenovo contract. Reports generated by DOE's AMS indicate that over 211,000 pieces of computer hardware were purchased through these contracts and assigned to one of over 2,000 DOE locations.

According to DOE, individual DOE sites are responsible for ordering computer hardware from these contracts.⁴ However, DOE mandates as part of its SOP governing "other than personal services" purchases that its schools and administrative offices follow certain uniform steps in their purchase of computer hardware. Specifically, DOE computer purchasers are required to prepare purchase orders (POs) in the Financial Accounting Management Information System (FAMIS) which must then be approved by the assigned approver (principal or department head). The schools and administrative offices are required to have staff members responsible for receiving and signing off on the delivery of computers. They are further required to maintain inventories of the equipment they receive and to certify their receipt of computers in FAMIS. Invoices for all purchases are sent to the Division of Financial Operations (DFO) by the original equipment manufacturer (OEM).⁵ The DFO is supposed to compare the invoice amounts to the purchase order amounts in FAMIS and approve the invoices for payment only if both amounts match. Payments for computer purchases are then processed through New York City's Financial Management System (FMS).

For all computer sales, information is provided by Apple and Lenovo to DOE and entered into the AMS database. All hardware ordered from Apple and Lenovo, except tablets and netbooks, are delivered to DOE sites by personal computer solution (PCS) vendors, who are also responsible for installation, repair, disposal, and asset management tracking. Currently, DOE has two PCS vendors: Dell Marketing LP (Dell) and ASI System Integration (ASI).⁶ According to DOE's SOP on Inventory, computer inventory must be maintained by the PCS vendor. The Dell contract states that "Dell will maintain (i.e. update after a disposal or MAC [moves/adds/changes]) Asset Management Database records while the OEM will create new records (i.e. populate) the Inventory records." Similarly, the ASI contract states that "[t]he service provider will have the responsibilities for update of asset records for the equipment assigned to them and work with the DOE to ensure these records are used to update the DOE inventory of records. The vendor shall use best efforts to update the Asset Management Database on a real time basis."

¹ Computer hardware includes desktop computers, notebook/laptop computers, and tablet personal computers.

² Both contracts are requirement contracts that have a single two-year renewal option, estimated to cost approximately \$124 million (\$55 million for the Apple contract and \$69 million for the Lenovo contract).

³ According to the contract, "the Commissioner reserves the right after award to order up to 20% more or less (rounded to the next highest whole number) than the specific quantities called for in the Contract."

⁴ DOE sites include DOE's administrative offices and schools.

⁵ In the case of the contracts at issue in this audit, the OEMs are Apple or Lenovo.

⁶ Tablets and netbooks are not covered under the PCS contracts and are shipped directly from the manufacturer to the DOE sites.

Objectives

The objective of this audit was to determine whether the computers purchased through the Apple and Lenovo contracts were properly accounted for by DOE.

Scope and Methodology Statement

We conducted this performance audit in accordance with generally accepted government auditing standards. 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

The scope of this audit was from July 1, 2011 through June 30, 2013. Please refer to the Detailed Scope and Methodology at the end of this report for the specific procedures and tests that were conducted.

Discussion of Audit Results

The findings in this report were discussed with DOE officials during and at the conclusion of this audit. A preliminary draft was sent to DOE officials and discussed at an exit conference held on September 29, 2014. On October 31, 2014, we submitted a draft report to DOE officials with a request for comments. We received a written response from DOE officials on November 18, 2014.

DOE disagreed with the audit findings and with 6 of the 8 recommendations. In their response, DOE officials noted that the “hundreds of thousands of devices in use at any time . . . are designed to be very portable which means devices are always moving.” They stated that “[w]ith an understanding of the importance of maintaining an accurate account of equipment purchased, the DOE determined that inventory should be managed by the division or school using the devices.” In mandating local rather than centralized inventory, DOE asserted that it “is committed to leveraging current systems to implement controls that safeguard acquired technology assets.” Additionally, DOE stated that “[t]he DOE does not agree that a single centralized inventory system is cost effective or practical.”

However, DOE does not make any effort to reconcile the individual site-based inventory records with its centralized purchase records maintained in the AMS. Instead, DOE stated that AMS “was not designed to serve as an inventory system. Rather, the system, populated as part of the purchase process by the DOE's vendors and/or original equipment manufacturers (OEM), was designed to facilitate repairs to equipment under warranty. As a secondary benefit, schools were given access to their AMS data as a tool to do their own inventory. They are under no obligation to use information in AMS, but it is available to them should they decide to use it.”

The weakness of this approach is evident from the fact that DOE was never able to identify the location of many of the sampled computers identified in AMS. DOE was aware of what inventory was missing for months since DOE officials generated the original AMS list and provided corrected location for 2,264 pieces of hardware on that list. Nevertheless, despite repeated corrected lists being sent to the audit team over the course of many months, DOE

ultimately never provided accurate locations for 727 computers. While DOE officials claim in their written audit response to have now identified the location of 219 additional computers following receipt of the draft audit, they provided no details or documentation to support that assertion and so there it is impossible for the auditors to verify the accuracy of the information asserted or that it does not duplicate computers the auditors already located.

As a system-wide database that records every laptop and related item purchased by DOE, AMS has the capability of tracking the location of computers. AMS could, if properly used, provide a cost effective independent validation of inventory at DOE's sites and ensure the safeguarding and accountability of computers. DOE's reliance on individual schools to maintain separate inventory systems does not allow for tracking transfers and relocation of equipment throughout the different DOE sites. By using an electronic inventory system like AMS, the entire process of tracking inventory would be more accurate and reliable.

DOE claims that "[t]he Comptroller did not investigate DOE's actual inventory process and as a result the audit provides an incomplete and uneven account of the location of equipment purchased by the DOE." DOE also questioned the auditor's methodology by stating "[a]n audit with the stated purpose of seeking all items listed in AMS is incomplete without reviewing the POs to identify the delivery location. This being said, the auditors audit testing methodology still relied on physically confirming the location of equipment based upon the location of the purchaser, instead of, say, delivery location, a more reasonable starting point. With this flawed methodology, the audit team faced a number of hurdles that led to incomplete information being included in the Report."

We disagree. Our audit did take into account DOE's actual inventory process and did not solely rely on the information in AMS. Even though DOE's AMS database should record the delivery site of computer hardware as well as each time hardware is relocated, we recognized that AMS was not being used as intended. To account for DOE's shortfall, we requested DOE provide documentation for the unaccounted hardware we identified as missing. DOE provided several purchase orders showing that the hardware was delivered to different locations. We reviewed each purchase order and accounted for the hardware delivered to other sites; however we could not account for 727 pieces of hardware.

The full text of the response received from DOE is included as an Addendum to this report.

FINDINGS AND RECOMMENDATIONS

As set forth in more detail below, we determined that DOE's controls and management over its computer hardware are insufficient to ensure that computer hardware was properly accounted for. DOE has not maintained a centralized inventory of computer hardware purchased. Accordingly, DOE was unable to provide the locations of 1,817 computers that, according to its records or those identified during our physical count at 9 sampled sites, had been purchased. Specifically, a report from the AMS database initially provided by DOE identified 10,307 computers as being located at Bronx P.S. 168. DOE officials subsequently provided what they represented to be a "corrected" list from AMS that indicated 9,217 of the computers on the first list were actually located at 244 different sites. However, the "corrected" AMS list still did not have a location for the remaining 1,090 computers; 1,044 were listed in the "corrected" list as "Asset Location Unknown" and 46 were simply not accounted for at all. Moreover, physical inventory counts at nine sampled locations (eight schools and the administrative office at 52 Chambers Street) selected from the "corrected" AMS list revealed that 727 pieces of computer hardware that DOE supposedly knew the location of were missing from those locations. In addition, we found that there was 394 items of computer hardware at the 9 sampled locations that remained unpacked and unused.

Inaccurate and Incomplete Inventory Lists

DOE does not maintain an accurate and complete inventory record of computer hardware. Moreover, the records it does maintain are inaccurate, incomplete and inconsistent. Of the DOE sites sampled in this audit, DOE was unable to provide the locations of 1,817 computers that according to its records, it has purchased. Since DOE does not have a centralized inventory system or accurate inventory records, we were not able to determine if the computer hardware that DOE and we were unable to locate during the course of the audit was stolen or just inadequately recorded in DOE's records.

Under current DOE procedures set forth in an SOP, each DOE site is required to conduct its own annual inventory count and maintain its own inventory records. No centralized inventory system is maintained by DOE. Further, the SOP requires that "[i]nventory of computers will be taken and maintained by Dell Managed Services (the former PCS vendor)." However, PCS vendors only update AMS when they relocate or dispose of computers,

Our review of AMS found that AMS data was not accurate and that DOE failed to take sufficient steps to ensure its accuracy. Specifically, we found that AMS listed computers with the same serial numbers more than once, did not record or did not accurately record the location of computers, and omitted some of the hardware purchased from Lenovo and Apple. In one instance where AMS indicated that Bronx P.S. 168 had 10,307 computers, the site was only able to locate ten computers. Of those ten computers, only five were correctly identified in AMS as located at that school.

In response to this discrepancy, DOE explained that the original list it had provided from AMS had the wrong location for the computers due to a system error. Accordingly, DOE subsequently provided what they said was a "corrected" list from AMS. However, of the 10,307 computers originally listed in AMS as located at Bronx P.S. 168, the new list supplied by DOE indicated that 9,217 of those computers were located at 244 different DOE sites, 1,044 of the computers were listed as "Asset Location Unknown," and 46 of the computers were no longer listed at all. According to the Chief Information Officer (CIO) from DOE's Division of Instructional

and Information Technology, the “Asset Location Unknown” is a “Holding site code for asset information that came in to us with missing or non-standard site information on the [PO].”

In a spot check at Brooklyn P.S.105, one of the 244 new locations listed, we confirmed that 87 computers identified in the “corrected” list as being at that location were, in fact, physically located at that location. However, we also found that the “corrected” list incorrectly identified 5 of the 10 computers as being located at Bronx P.S. 168 when they were in fact located at two other schools.

In addition, we found that while DOE’s “corrected” AMS list indicated that the 15 DOE administrative offices located at 52 Chambers Street in Manhattan had 3,285 computers from the Lenovo and Apple contracts, only 378 of those computers were found in a physical inspection of these offices. Thereafter, DOE provided POs that indicated that 2,264 computers were ordered by these offices, but delivered to other DOE sites. However, even with those additional records, 643 computers identified in the “corrected” AMS list as located at 52 Chambers Street remain unaccounted for by DOE.

In response to our questions about the inaccuracy of the location information in the AMS database, DOE’s CIO stated that “[l]ocation is not important data in the Asset Database because it is not an inventory data base. . . . [T]he asset management data is for PCS communication. If someone uses it to do inventory then that would be a divisional or school choice and is not a central policy or requirement. So there is no need to update the location information unless the school or division wants to update it.” We were informed by DOE officials that AMS is mainly used by DOE to determine what items are eligible for service by the PCS vendors.

However, DOE’s vendor contracts clearly contemplate the use of AMS for to assist with inventory tracking and require the vendors that work with DOE to keep the information in the database accurate. According to the PCS contracts, “[t]he NYCDOE currently maintains an Asset Inventory Database System [AMS] which is used to perform the necessary asset tracking and management reporting.” The contracts further state that “The selected service provider [PCS vendor] will have responsibilities for update of asset records for the equipment assigned to them and work with DOE to ensure these records are used to update the DOE inventory of record.”

Without having a complete and accurate centralized inventory record, it is difficult to determine if computers purchased by DOE are being used for the purpose for which they were purchased or by DOE at all. Accordingly, there is an increased risk that computers may be stolen and that thefts will not be detected. If DOE required each site to submit the results of periodic inventory counts, it could conduct reconciliations to verify the accuracy of AMS data, resolve any discrepancies and thereby maintain an accurate central inventory.

DOE Response: “During the audit, the DOE provided the Comptroller with an account of 2,324 equipment item purchases that were initiated at 52 Chambers but delivered to another location. This self-motivated exercise was undertaken to set expectations of where the Comptroller could locate the equipment and was imperative to the Comptroller making a full faith effort to locate equipment. Additionally, inventory listings provided by the divisions at 52 Chambers also listed equipment in satellite offices. Ignoring the equipment located in the satellite offices has resulted in the Comptroller’s numbers being short of the actual equipment that can be accounted for by the DOE.”

“Post exit conference, the DOE utilized the inventories provided to the Comptroller by divisions at 52 Chambers to see if any of the unaccounted for equipment was included on them. On the inventory listings, the DOE located 158 pieces of equipment, some of which are located at 49-51 Chambers, a satellite office across the street from 52 Chambers. The equipment was inventoried, however, the Comptroller did not visit the alternate site nor did the Report give the DOE credit for those items. Therefore, the number of unidentified equipment in the Report represents the results of an audit that ignores evidence provided during the audit testing phase.”

Auditor Comment: Contrary to DOE’s claim, DOE’s Auditor General was made aware of the missing hardware more than four months prior to receiving the preliminary report. Initially, we requested that the Auditor General identify the locations of 2,903 pieces of hardware identified as missing at 52 Chambers Street. The Auditor General thereafter was able to provide several purchase orders which documented that 2,264 (not the 2,324 identified in the DOE audit response) of the 2,903 were delivered to other sites including the satellite offices. The Auditor General did not, however, account for the remaining 643 pieces of missing hardware at 52 Chambers Street. There were several emails providing the purchase orders with the last one being sent on May 14, 2014. This email states that “this concludes our submission of POs of items listed in AMS as delivered to Tweed, but actually delivered elsewhere.” The locations of the 643 missing items are still unidentified.

We cannot affirm or rebut DOE’s claim that since receipt of the draft audit it has located 158 pieces of hardware because DOE did not provide sufficient reliable documentation to indicate what items were found. Accordingly, we have no basis for determining if these newly located items are among those that we had not yet located. If in fact DOE had provided us with credible evidence of the locations of the missing items, we would have credited DOE with properly accounting for the 158 missing pieces of hardware as we did repeatedly throughout the course of the audit.

Computers Not Found at Designated Locations

Our comparison of “corrected” AMS inventory records with our physical count of computers for 9 selected sites revealed that 727 computers were missing from the locations provided in the “corrected” AMS record. DOE could not determine their actual locations even after months of attempting to do so in connection with the audit. The missing computers represent approximately 9 percent of the computers that should have been on hand at the nine locations according to AMS. Table I summarizes the results of our physical inventory counts.

Table I

Result of Physical Inventory Counts
(Desktops and Laptops Only)

Sites	Total Computers Purchased During FY 2012 – 2013 Per AMS	Computers Unaccounted For	
		Total	Recorded on Sites' Inventory Record
Bronx I.S.254	66	3	3
Queens P.S.152	509	4	0
M625 (High School of Graphic Communication Arts)	867	26	4
K455 (Boys and Girls High School)	920	16	0
Queens J.H.S.217	1158	6	6
Queens P.S.165	300	0	0
Brooklyn P.S.105	534	4	0
Q430 (Francis Lewis High School)	373	25	25
Administrative Offices (52 Chambers)	3,285	643	0
Total	8,012	727	38

We discussed the results of our inventory counts with DOE officials. Although we requested evidence of the location of the computers in April 2014, DOE officials have not provided any documentation to explain the 727 unaccounted computers.

DOE Response: “The presence of unidentified equipment by the Comptroller was never shared with the DOE until the preliminary draft was shared in September 2014. The DOE's Office of School Support immediately followed up with each school audited and the schools located and/or accounted for 61 of the 84 unidentified pieces of equipment, leaving only 23 pieces unaccounted for, or .05% of the total equipment purchased. Had the DOE, and in turn the schools, been notified of the Comptroller's findings in a more appropriate timeframe, details could have been shared earlier, resulting in the auditors' findings reflecting such.”

Auditors Comments:, Contrary to DOE's response, DOE officials were present during each one of our inventory counts. In addition, after each count, we provided lists of unaccounted hardware to those school officials. Moreover, each school was given time to locate missing hardware and we made follow up visits to verify the identity and location of any hardware DOE informed us they found. However, DOE's assertion that 61 pieces of unaccounted hardware were found was not substantiated by sufficient evidence. Based on nothing more than their unsupported assertion in response to the draft audit report, we cannot verify that 61 new items not previously counted have now

been located at the schools. Accordingly, our audit can still not account for the 84 pieces of hardware.

Lack of Oversight over Tablet Computers

During FY 2012 and 2013, schools spent approximately \$26.9 million on iPad purchases. However, DOE does not maintain an inventory of these purchases. DOE's SOP chapter on inventory requires that equipment must be inventoried. Notwithstanding this requirement, our inventory counts found that Bronx I.S. 254 and High School of Graphic Communication Arts (two of the eight sampled schools) did not include iPads on their own school inventory records. Table II lists the number of iPads present in the school and the number of iPads listed in the schools' inventory.

Table II

Result of Physical Inventory Counts
of iPads

Sites	Number of iPads Purchased by the Sites	Number of iPads listed on the Sites' Inventory Records
Bronx I.S.254	20	0
Queens P.S.152	120	120
M625 (High School of Graphic Communication Arts)	222	0
K455 (Boys and Girls High School)	39	32
Queens J.H.S.217	11	9
Queens P.S.165	147	145
Brooklyn P.S.105	96	96
Q430 (Francis Lewis High School)	301	301
Total⁷	956	703

By not keeping track of the iPads, DOE was exposing itself to potential theft and misuse of iPads.

DOE Response: "The audit report states that the DOE does not maintain an inventory of iPads and that two schools did not include iPads on their own school inventory. However, the Comptroller's Report goes on to state that of the eight schools, 703 of the iPads purchased were on sites' inventory listings. For the two schools that did not have

⁷ The administrative office (52 Chambers Street) did not have records indicating the number of iPads purchased nor did they list all purchases on their inventory.

iPads listed on their inventories: one did not list them because they were purchased by an external office; and the second did not include them because they were in their original packaging and unopened as of the time of the audit. At the time of this response, all iPads in these schools have been added to the schools' inventory listings.”

Auditor Comments: We are pleased that DOE has added the previously unlisted iPads to the schools' inventory lists. All computer equipment must be properly accounted for. The discrepancies we identified about the number of iPads reinforce our argument that DOE needs to have a centralized computer inventory system to account for computer hardware.

Underutilized Computer Hardware at Schools

While we were conducting inventory counts at the schools, we discovered new unopened laptops and iPads kept in storage. For example, we found 71 laptops and 7 iPads, all unopened, at Boys and Girls High School in Brooklyn. School officials could not explain why the laptops and iPads, some purchased as early as 2011, were not being used. Table III lists the number of computers and iPads we found going unused at the schools that we visited.

Table III

Computer Hardware Not Used

School	Total Computers Purchased during FY 2012-2013	Total iPads Found/Listed at the Site	Computer Hardware Not Used	Percentage
Bronx I.S.254	66	20	20	24%
Queens P.S.152	509	120	120	19%
M625 (High School of Graphic Communication Arts)	867	222	165	16%
K455 (Boys and Girls High School)	920	39	78	8%
Queens J.H.S.217	1185	11	0	0%
Queens P.S.165	300	147	0	0%
Brooklyn P.S.105	534	96	6	1%
Q430 (Francis Lewis High School)	373	301	5	1%
Total	4,727	956	394	7%

The computer hardware was intended to be used for educational purposes. DOE's SOP chapter on inventory requires that "storage sites be reviewed periodically to make sure that all supplies and equipment are being fully utilized and items are neither over stocked nor under stocked." However, DOE failed to implement its own procedures to ensure computer hardware was fully utilized and that unnecessary duplicative purchases were not made. Consequently, City resources have been wasted and DOE failed to obtain the educational benefits intended by the purchases.

DOE Response: "The audit report further states that the DOE failed to implement its own procedure to ensure hardware was fully utilized as it identifies 394 of 4,727 pieces of equipment not being used. However, despite the DOE's request for details to be provided by the auditors, no timeline or other information was provided by the Comptroller."

Auditor Comments: DOE failed to provide sufficient information to us during the course of the audit for us to be able to provide it with the age of all of the unused equipment. Moreover, the DOE itself did not follow-up and ascertain specifics about the 394 pieces of missing hardware and determine the ages of this equipment. Finally, DOE's explanations for why equipment was not being used do not contradict the fact that equipment was purchased that was not used or indeed unusable by the purchasers in some instances, which is a waste of valuable City resources.

Recommendations

1. DOE should have a centralized inventory system for computer hardware that includes purchase and delivery information as well as current location. DOE should explore using its existing AMS system for this purpose.

DOE Response: "The DOE does not agree that a single centralized inventory system is cost effective or practical. The DOE will explore if sharing particular data points between our purchasing and OEM populated system will be of benefit to the DOE's asset management strategy. If necessitated, estimates from vendors regarding related work will be requested and cost effectiveness determined."

Auditor Comment: We disagree. DOE has purchased nearly \$200 million worth of computer hardware from Apple and Lenovo. Moreover, as DOE itself acknowledges, the "hundreds of thousands of devices in use at any time . . . are designed to be very portable which means devices are always moving." Without a complete and accurate centralized inventory record, DOE has limited assurance computers are accurately accounted for. Since AMS has the capability of tracking the location of computers, it will be cost effective to utilize AMS for that purpose.

2. DOE should revise its Standard Operating Procedures to include the following:
 - Ensure that all computer hardware purchases, including tablets and netbooks, are included in AMS;
 - Require all schools and administrative sites to conduct annual inventory counts and submit the results of their annual inventory counts to a central administrative unit charged with tracking all computer inventory

and maintaining a comprehensive and accurate inventory of all DOE computer hardware;

- Reconcile the results of inventory counts with the information in AMS to ensure information in AMS is accurate and up to date; and
- Require all schools and administrative sites to include tablets and netbooks in the annual inventory count.

DOE Response: “The DOE has initiated reviews of its SOP to include appropriate controls for schools and administrative offices and consider the portable nature of the equipment being purchased.”

Auditor Comment: We are pleased that DOE has initiated reviews of its SOP. In doing so, DOE needs to take into consideration the findings discussed in this report. The current SOPs do not include any requirement that site administrators update the results of their annual inventory counts in AMS. By imposing such a requirement, independent verification could be performed to ensure that accurate and complete inventories are maintained.

3. DOE should routinely monitor recordkeeping procedures for computer hardware at DOE sites to ensure that accurate and complete inventories are maintained.

DOE Response: “It is the responsibility of the principal or administrative office head to ensure that SOP regarding inventory is followed. We will annually issue a reminder to principals and administrative office heads to remind them of this responsibility.”

4. DOE should determine the physical locations of the 1,817 computers (1,090 computers from discrepancies identified between AMS lists and the 727 computers) that could not be identified during our physical inventory counts.

DOE Response: “The Comptroller was unable to identify these 1,090 computers because they were using AMS data to locate equipment against DOE’s recommendation. Repeatedly the DOE explained to the Comptroller’s team that AMS is not designed to serve as an inventory system. Rather, the system, populated as part of the purchase process by the DOE’s vendors, was designed to facilitate repairs to equipment under warranty. There is therefore no proof that the 1,090 pieces of equipment are unaccounted for, as no testing of such was completed.”

Auditor Comment: Notwithstanding the DOE’s contention that AMS is not an inventory system, DOE maintains that it has a functional inventory system that allows it to keep track of all of the items that were the subject of this audit. Moreover, based on its existing systems, DOE was able to provide us with a “corrected” AMS list to resolve the discrepancies in missing computer hardware we identified. It is incumbent upon DOE to locate the 1090 items that it has not yet been able to locate based on its existing inventory systems.

5. DOE should conduct a system-wide inventory count and reconciliation of DOE data to determine if other computers are not properly accounted for.

DOE Response: “We respectfully disagree. The SOP states that central office and schools are responsible for conducting annual inventory. Local administrators maintaining inventories should do so in a method that matches

devices and patterns of use at their sites. This practice supports accountability without burdening schools and central staffers. This aligns with the DOE's overarching goal to prevent administrative compliance from taking time away from the classroom. The collective of these inventories accounts for equipment system-wide. We will issue annual reminders to principals and administrative office heads to remind them of this responsibility.”

Auditor Comment: DOE fails to adequately recognize and fulfill its responsibility to safeguard public funds. As the audit has amply demonstrated, DOE cannot simply rely on the site’s administrator to account for computer inventory. That system has been demonstrated not to be a reliable system. DOE does not have assurance that the all of the hundreds of thousands of computer items it has purchased are actually being used for appropriate DOE purposes. DOE needs to revise its SOPs and have site administrators submit the results of annual inventory counts as well as all movements of hardware in AMS. Using AMS as a centralized computer inventory system would simplify inventory tracking and increase accountability.

6. DOE should refer evidence of misconduct in connection with the purchase, receipt and usage of computer equipment to appropriate authorities, including law enforcement in the case of evidence of potential criminal activity.

DOE Response: “We agree. The DOE’s current SOP on inventory requires administrative offices and schools to report missing equipment to the appropriate authorities, including the New York Police Department.”

7. DOE should instruct schools to identify unused computer hardware in their inventory records.

DOE Response: “The SOP currently instructs schools to determine equipment for which they have no further use. At schools, equipment is placed in and out of service based on the needs of the school. To update an inventory system every time this happens is an unnecessary burden to schools especially given the volume of technology used in schools. As noted in the Report, unused equipment was not significant, and therefore does not warrant such an action.”

Auditor Comment: Our audit was based on only 9 sites. For DOE to conclude that the number of exceptions cited in the report is not significant is inappropriate. DOE needs to reconsider its position and adapt the SOPs accordingly.

8. DOE should transfer unused hardware to locations where it is needed.

DOE Response: “We agree. When equipment is no longer needed by a school, the DOE transfers hardware to locations where it is needed.”

DETAILED SCOPE AND METHODOLOGY

We conducted this performance audit in accordance with generally accepted government auditing standards. 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. This audit was conducted in accordance with the audit responsibilities of the City Comptroller as set forth in Chapter 5, §93, of the New York City Charter.

To achieve our audit objectives, we reviewed the contracts between DOE and Apple and between DOE and Lenovo. To obtain an understanding of the inventory procedures in use, we reviewed the DOE's latest SOP chapter on inventory. To gain an understanding of internal controls over purchasing practices and the payment approval process, we interviewed relevant personnel from DOE. We also conducted walk-through meetings about inventory control practices with PCS vendors and administrators from schools and administrative sites. We documented the results in memoranda and flowcharts.

As of September 2014, the total spending on the Apple contract was \$96,808,690.35 and on the Lenovo contract was \$100,320,222.23. To determine the accuracy and completeness of DOE's payment record on computer purchases, we compared the amount paid to the FMS record of payments.

We judgmentally selected nine DOE sites to conduct our physical inventory count. Seven of the nine sites had the largest dollar amount of computer hardware purchases during FY 2012 and 2013. The seven sites combined spent a total of \$3,767,619 on Apple and Lenovo computer purchases during FY 2012 and 2013. Additionally, we selected an administrative site that purchased the largest amount of computers (during FY 2012 and FY 2013, the administrative offices at 52 Chambers purchased 3,296 computers) and a school that purchased computers through the E-Learning Program (during FY 2012 and 2013, the E-Learning Program purchased \$3,522,911).⁸

We examined the inventory records and conducted a physical inventory count from November 2013 to February 2014 at the sampled sites, which included three high schools, two junior high schools, three elementary schools, and one administrative office. At each of the selected DOE sites, we interviewed the computer coordinator or the administrative official responsible for computer inventory. We reviewed the inventory and recordkeeping procedures for computer equipment, the disposal of obsolete equipment, and the safeguarding of physical assets.

We conducted physical inventory counts of all computer hardware at the selected sites. For schools, we compared the serial numbers on the computer hardware to the AMS list record for FY 2012 and 2013. For the administrative site, we compared serial numbers on computer hardware to the inventory lists provided by the offices. We discussed discrepancies with site administrative officials.

We also examined the POs for iPads from the sample sites to determine whether the purchases were properly supported by documentation and recorded on the sites' inventory list and the AMS system.

⁸ E-Learning is a program that provides online learning through a learning management system which gives schools access to an array of online content, course videos, articles and learning guides.



**Department of
Education**

Carmen Fariña, Chancellor

Kathleen Grimm
Deputy Chancellor

November 18, 2014

Ms. Marjorie Landa
Deputy Comptroller for Audits
New York City Office of the Comptroller
1 Centre Street, Room 1100
New York, NY 10007-2341

Re: Audit Report on Department of Education's Oversight of Computer Hardware Purchased through the Apple Inc. and Lenovo Inc. Contracts (FM14-057A)

Dear Ms. Landa:

This letter will serve as the NYC Department of Education's (DOE) formal response to the New York City Office of the Comptroller's (Comptroller) draft report of the *Department of Education's Oversight of Computer Hardware Purchased through the Apple Inc. and Lenovo Inc. Contracts* (Report).

Like all organizations, the DOE has been transformed by the vast shifts in and rapid evolution of technology. This transformation has seen technology move from an expensive specialist terminal bolted on a desk, to an inexpensive powerful multifunctional device that fits in a pocket. For a large organization like the DOE, the transformation has literally resulted in hundreds of thousands of devices in use at any time. Most of these devices are designed to be very portable which means devices are always moving. This has enabled a mobile staff and student body that, in a single day, can work in multiple schools and even multiple locations accompanied by their devices. A compounding factor that must be identified is the number of DOE buildings subject to an opening and closing procedure each year. Additionally, it is not uncommon for many of these buildings to be reconfigured during that time as well. As staff and students are reassigned even the least portable computers can be moved over and over again.



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With an understanding of the importance of maintaining an accurate account of equipment purchased, the DOE determined that inventory should be managed by the division or school using the devices. Local administrators must maintain an inventory with an approach that matches the type and use of the device. The DOE is committed to leveraging current systems to implement controls that safeguard acquired technology assets.

These local inventory processes were described in detail to the Comptroller's audit team and offers to demonstrate the efficacy of this approach were extended. The Comptroller did not investigate DOE's actual inventory process and as a result the audit provides an incomplete and uneven account of the location of equipment purchased by the DOE.

Repeatedly, the DOE explained to the Comptroller's team that the Asset Management System (AMS) was not designed to serve as an inventory system. Rather, the system, populated as part of the purchase process by the DOE's vendors and/or original equipment manufacturers (OEM), was designed to facilitate repairs to equipment under warranty. As a *secondary* benefit, schools were given access to their AMS data as a tool to do their own inventory. They are under no obligation to use information in AMS, but it is available to them should they decide to use it.

The Comptroller's team was also informed that the "location" in AMS is tied to the purchaser location and should not be used to identify equipment location. This is especially true when it comes to equipment listed as located at 52 Chambers, the DOE's headquarters, where at the time of the audit 11 divisions were represented. These divisions often have the need to purchase equipment for satellite offices and schools. This means that the Purchase Order (PO) is initiated by a staff member who is located at 52 Chambers and delivery instructions on the PO state to deliver equipment to an alternate location. The delivery details can be seen by reviewing the PO; one cannot rely on the information in AMS alone to identify the location of purchased equipment.

For school IT purchases, while it is most common for the purchaser to be in the school building, there are circumstances where central offices purchase equipment on behalf of schools. Therefore, again, AMS location information is not the right way to identify where to find equipment purchased. An audit with the stated purpose of seeking all items listed in AMS is incomplete without reviewing the POs to identify the delivery location. This being said, the auditors audit testing methodology still relied on physically confirming the location of equipment based upon the location of the purchaser, instead

of, say, delivery location, a more reasonable starting point. With this flawed methodology, the audit team faced a number of hurdles that led to incomplete information being included in the Report.

Information Regarding Location of Equipment Not Correctly Utilized

During the audit, the DOE provided the Comptroller with an account of 2,324 equipment item purchases that were initiated at 52 Chambers but delivered to another location.¹ This self-motivated exercise was undertaken to set expectations of where the Comptroller could locate the equipment and was imperative to the Comptroller making a full faith effort to locate equipment. Additionally, inventory listings provided by the divisions at 52 Chambers also listed equipment in satellite offices. Ignoring the equipment located in the satellite offices has resulted in the Comptroller's numbers being short of the actual equipment that can be accounted for by the DOE.

The auditors state that they selected the largest purchasers of Apple and Lenovo equipment for their audit. It makes sense then that 52 Chambers, the DOE's headquarters that houses representatives from the various divisions, was part of that group as every division in the DOE has representation there. The division representatives, senior leaders within the DOE, have teams that manage the purchasing of equipment for the multitude of offices under their purview. This is why it is not possible to expect that all equipment purchased from 52 Chambers will be housed there. This structure, which was explained to the auditors and confirmed during interviews with Directors of Operations, means that verifying equipment in the satellite offices is imperative to conducting an audit that reflects a full faith effort to locate equipment purchased.

Post exit conference, the DOE utilized the inventories provided to the Comptroller by divisions at 52 Chambers to see if any of the unaccounted for equipment was included on them. On the inventory listings, the DOE located 158 pieces of equipment, some of which are located at 49-51 Chambers, a satellite office across the street from 52 Chambers. The equipment was inventoried, however, the Comptroller did not visit the alternate site nor did the Report give the DOE credit for those items. Therefore, the number of unidentified equipment in the Report represents the results of an audit that ignores evidence provided during the audit testing phase.

Inventory Information at Schools Underrepresented

¹ This was accomplished by sharing POs which indicated delivery locations other than 52 Chambers.



**Department of
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In the Report, the auditors lump together their results for central offices and school inventories together and indicate that missing equipment represent approximately 9% of the equipment that should have been on hand. When looking at the Comptroller's findings at schools, this is a huge misrepresentation. Of the 4,727 pieces of equipment purchased by schools the auditors found that only 84 were unaccounted for, which represents 1.8% of the purchased equipment. The presence of unidentified equipment by the Comptroller was never shared with the DOE until the preliminary draft was shared in September 2014. The DOE's office of School Support immediately followed up with each school audited and the schools located and/or accounted for 61 of the 84 unidentified pieces of equipment, leaving only 23 pieces unaccounted for, or .05% of the total equipment purchased. Had the DOE, and in turn the schools, been notified of the Comptroller's findings in a more appropriate timeframe, details could have been shared earlier, resulting in the auditors' findings reflecting such.

The audit report states that the DOE does not maintain an inventory of iPads and that two schools did not include iPads on their own school inventory. However, the Comptroller's Report goes on to state that of the eight schools, 703 of the iPads purchased were on sites' inventory listings. For the two schools that did not have iPads listed on their inventories: one did not list them because they were purchased by an external office; and the second did not include them because they were in their original packaging and unopened as of the time of the audit. At the time of this response, all iPads in these schools have been added to the schools' inventory listings.

The audit report further states that the DOE failed to implement its own procedure to ensure hardware was fully utilized as it identifies 394 of 4,727 pieces of equipment not being used. However, despite the DOE's request for details to be provided by the auditors, no timeline or other information was provided by the Comptroller. There are many reasons why at schools equipment is not always immediately put into use including:

- School Wi-Fi bandwidth was found to be not sufficient to handle the new equipment;
- Staff need to be trained on equipment and its instructional use;
- Equipment is planned for use in a future semester; and

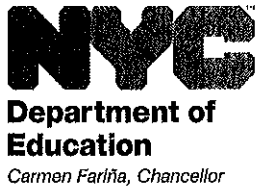
- Register fluctuations change the demand of the equipment.

One of the schools in the audit stated that an unexpected bandwidth issue prohibited them from utilizing the 120 iPads purchased as quickly as desired. The repairs were completed and as of the date of this response the iPads are in use. Another school where the auditors found underutilized equipment was a phase out school with an unexpected drop in register which changed the demand for the equipment purchased. The school has made plans to properly utilize the 165 pieces of equipment, as well as developing a transition plan to transfer the equipment to the new schools that will be moving into the building. If you remove the 285 pieces of equipment whose use is explained above, the findings would change to 109 pieces of equipment or 2.2% that could be identified as underutilized.

Inconsistencies in Confirmation of Identified Equipment

The Comptroller's protocol leads to the following issues in crediting the DOE for equipment:

- The DOE provided 70 POs that covered the purchase of 2,324 pieces of equipment purchased from 52 Chambers but delivered off-site. The Comptroller gave the DOE credit for some of the equipment on these POs but in 78 instances the equipment was included in their tally of unaccounted for equipment.
- Laptops are the most common item listed on the Comptroller's unaccounted for equipment listing. The auditors did not request that laptops be made available on the day of their meeting with the Directors of Operations at 52 Chambers. Instead, they asked respective offices if laptops were included in their inventory listings; if not included, the Directors of Operations were asked to update the listing and provide it to the auditors. Despite the Comptroller crediting the DOE for some of the laptops on the inventories, credit was not granted for all.
- Before the exit conference in September, the only outreach from the auditors regarding "missing equipment" was for a single desktop assigned to one of the audited schools. The DOE's Office of School Support reached out to the school and identified that the computer was assigned to the security desk. This information was shared with the auditors, however no request came from them to return to the school to confirm the information and the DOE was not credited for this piece of equipment.



As mentioned earlier, the audit team did not update the DOE throughout the course of the audit. The September issuance of the preliminary draft was the first time the Comptroller notified the DOE of the 727 pieces of equipment that were unidentified at 52 Chambers and the audited schools. After the unidentified listing was requested by the DOE and provided, hidden in a footnote was the fact that the Comptroller gave credit to the DOE for 159 pieces of equipment that they observed but for which they did not physically confirm the serial and/or asset tag number.² The fact that the audit team stopped taking down identifying information was never shared with the DOE during the course of the audit. The DOE's request for additional time to locate the equipment was denied based upon the Comptroller's contention that the DOE was aware of the unidentified equipment. Without the Comptroller's findings, it's unclear how the DOE would have known which equipment they had physically identified at the time of their audit.

In conclusion, although the Comptroller did not consistently credit the DOE for equipment identified during the course of the audit, the DOE understands the importance of documenting and implementing strong controls to safeguard equipment.

Response to Recommendations

To address the issues in the Report, the auditor recommend that:

Recommendation 1: DOE should have a centralized inventory system for computer hardware that includes purchase and delivery information as well as current location. DOE should explore using its existing AMS system for this purpose.

Response: The DOE does not agree that a single centralized inventory system is cost effective or practical. The DOE will explore if sharing particular data points between our purchasing and OEM populated system will be of benefit to the DOE's asset management strategy. If necessitated, estimates from vendors regarding related work will be requested and cost effectiveness determined.

Recommendation 2: DOE should revise its Standard Operating Procedures (SOP) to include the following:

² It is important to note that the asset tag and/or serial number were the identifying information the Comptroller was using to match items to AMS.

- Ensure that all computer hardware purchases, including tablets and netbooks, are included in AMS;
- Require all schools and administrative sites to conduct annual inventory counts and submit the results of their annual inventory counts to a central administrative unit charged with tracking all computer inventory and maintaining a comprehensive and accurate inventory of all DOE computer hardware;
- Reconcile the results of inventory counts with the information in AMS to ensure information in AMS is accurate and up to date; and
- Require all schools and administrative sites to include tablets and netbooks in the annual inventory count.

Response: The DOE has initiated reviews of its SOP to include appropriate controls for schools and administrative offices and consider the portable nature of the equipment being purchased.

Recommendation 3: DOE should routinely monitor recordkeeping procedures for computer hardware at DOE sites to ensure that accurate and complete inventories are maintained.

Response: It is the responsibility of the principal or administrative office head to ensure that SOP regarding inventory is followed. We will annually issue a reminder to principals and administrative office heads to remind them of this responsibility.

Recommendation 4: DOE should determine the physical locations of the 1,817 computers (1,090 computers from discrepancies identified between AMS lists and the 727 computers) that could not be identified during our physical inventory counts.

Response: The Comptroller was unable to identify these 1,090 computers because they were using AMS data to locate equipment against DOE's recommendation. Repeatedly the DOE explained to the Comptroller's team that AMS is not designed to serve as an inventory system. Rather, the system, populated as part of the purchase process by the DOE's vendors, was designed to facilitate repairs to equipment under warranty. There is therefore no proof that the 1,090 pieces of equipment are unaccounted for, as no testing of such was completed.

In the process of updating its inventory records and practices, the DOE will flag for divisions and schools the 727 pieces of equipment that the Comptroller was unable to identify during the testing phase of the audit.

Recommendation 5: DOE should conduct a system-wide inventory count and reconciliation of DOE data to determine if other computers are not properly accounted for.

Response: We respectfully disagree. The SOP states that central office and schools are responsible for conducting annual inventory. Local administrators maintaining inventories should do so in a method that matches devices and patterns of use at their sites. This practice supports accountability without burdening schools and central staffers. This aligns with the DOE's overarching goal to prevent administrative compliance from taking time away from the classroom. The collective of these inventories accounts for equipment system-wide. We will issue annual reminders to principals and administrative office heads to remind them of this responsibility.

Recommendation 6: DOE should refer evidence of misconduct in connection with the purchase, receipt and usage of computer equipment to appropriate authorities, including law enforcement in the case of evidence of potential criminal activity.

Response: We agree. The DOE's current SOP on inventory requires administrative offices and schools to report missing equipment to the appropriate authorities, including the New York Police Department.

Recommendation 7: DOE should instruct schools to identify unused computer hardware in their inventory records.

Response: The SOP currently instructs schools to determine equipment for which they have no further use. At schools, equipment is placed in and out of service based on the needs of the school. To update an inventory system every time this happens is an unnecessary burden to schools especially given the volume of technology used in schools. As noted in the Report, unused equipment was not significant, and therefore does not warrant such an action.

Recommendation 8: DOE should transfer unused hardware to locations where it is needed.



**Department of
Education**

Carmen Fariña, Chancellor

Response: We agree. When equipment is no longer needed by a school, the DOE transfers hardware to locations where it is needed.

Sincerely,

A handwritten signature in black ink that reads 'Kathleen Grimm'. The signature is fluid and cursive, with a large, looping 'G' at the end.

Kathleen Grimm

C: D. Labban