Tempe
Internal Audit

Memorandum

TO:	Mark Wittenburg, Information Technology Director
THRU:	Bill Greene, City Auditor (X8982)
FROM:	Diana Storino (X8997)
CC:	Andrew Ching, City Manager
	Steven Methvin, Deputy City Manager, Chief Operating Officer
	Ken Jones. Deputy City Manager, Chief Financial Officer
	Rosa Inchausti, Deputy City Manager
DATE:	June 30, 2021
SUBJECT:	FINAL REPORT: IT Asset Inventory Audit

Attached is our final report on the subject audit. Copies of this report will be distributed to the mayor and council and posted to the Internal Audit Office website.

Thank you and your staff for your cooperation during this project.

IT Asset Inventory Audit

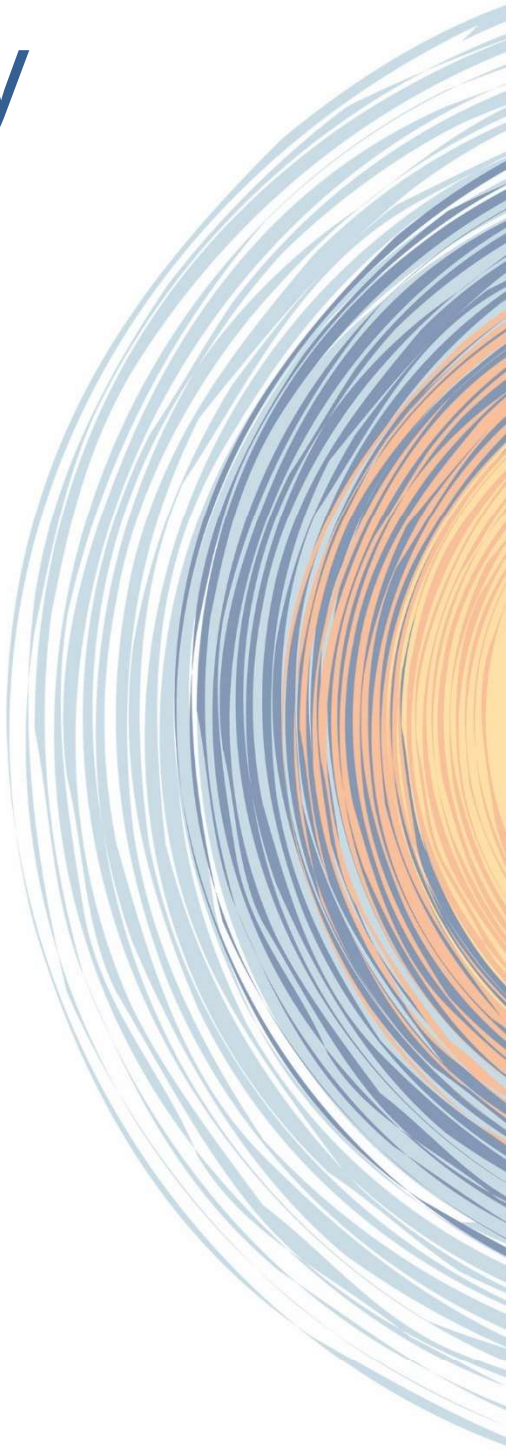
June 30, 2021

Project Team:

Bill Greene, City Auditor
Diana Storino, Sr. Internal Auditor

Mission Statement

To enhance and protect organizational value by providing high-quality, objective, risk-based audit and consulting services to assist the City in accomplishing strategic priorities, goals, and objectives.



Tempe
Internal Audit

20 E. 6th Street, 2nd Floor | Tempe, AZ 85281 | 480-350-8982

Executive Summary

Purpose

We evaluated internal controls governing Information Technology (IT) asset inventory management for the hardware asset lifecycle (from purchase to retirement) and verified information in the asset management system was accurate and entered in accordance with policies and procedures.

Background

In June 2013, IT converted their asset inventory management system from Hansen to Remedyforce (RF), IT Service Management System (ITSM). RF Configuration Management Database (RFCMDB) is a database that contains information about the components used in IT services. Examples include personal computers, zero client, thin client, laptops, tablets, docking stations, monitors, printers, scanners, plotters, servers, radios, phones, access points, switches, routers, cameras, and firewalls. As of November 5, 2020, there were about 22,000 inventory items recorded in the database valued at about $35 million. Management of these assets are primarily assigned to four IT divisions: System Administration, Network Operations, Support Services and Information Security Office.

Results in Brief

Improvements are needed to strengthen the tracking and monitoring of IT asset inventory to improve the accuracy of data in the inventory management system and adequately safeguard City assets prior to disposal.

A requirement to conduct and document periodic physical inventory counts of all inventory (not just refresh items) and the related update of system data should be added to existing IT asset governance policies. A periodic inventory count helps to ensure that employees are following established procedures and reduces the time required to locate assets that cannot be found because of inaccurate system data. Our report also includes a discussion of 11 areas which should be incorporated when updating policies and procedures. The expanded governance documents combined with continuous training of the workforce and ongoing communication to ensure all staff understand the processes will increase the accuracy of the information recorded in the CMDB.

During warehouse site visits, we noted physical safeguards existed to protect the City's assets; however, inventory needs to be better organized to avoid comingling of obsolete and current inventory to reduce the risk of misappropriation and foster a more efficient operation. In addition, perpetual

tracking of assets should be done with the goal of knowing exactly where assets are located in the warehouse at all times.

Based on our site visits, warehouses had physical barriers and restricted access through the use of badge access and/or alarms. The Hardy Yard warehouse was organized with items being worked on located in one area and other items waiting to be deployed. However, we noted some obsolete inventory comingled with current inventory. The Priest Yard warehouse contained many items that needed to be recycled. There were also piles of inventory throughout the warehouse that were obsolete and commingled with current inventory. There is currently no tracking of incoming or outgoing assets at the Priest Yard and no documentation recording incoming assets at the Hardy Yard warehouse when assets are received to be recycled.

Recommendations

Our detailed report includes recommendations to further strengthen IT asset management policies and related controls.

Department Responses to Recommendations

Rec. # 1.1: Perform periodic physical inventory audits for all assets (not just refresh items).	
***Response*:** IT will put a process into place to have the IT Administration Team coordinate an annual audit after the close of the fiscal year for all hardware. The team will use a combination of software discovery tools and physical inventory to verify asset information in the CMDB (inventory).	***Target Date*:** 9/1/21
Explanation, Target Date > 90 Days: N/A	
Rec. # 1.2: Research the possibility of further limiting the number of employees with the authority to add and modify permissions for granting access to the warehouses. Formalize periodic supervisory review of access reports to detect any irregularities.	
***Response*:** Add a process to the Service Management/Access Management policy to include a bi-annual audit of the card access system. Limit warehouse(s) access to only those employees assigned to the facility as a Service Practitioner (SP) role.	***Target Date*:** 9/1/21
Explanation, Target Date > 90 Days: N/A	
Rec. # 1.3: Organize all warehouses and ensure recycled items are palletized and removed from warehouse once a pallet is full.	
***Response*:** IT warehouse Service Practitioners will use current process to complete a “clean up” while new processes are developed for a more sustainable recycling procedure.	***Target Date*:** 10/1/21
Explanation, Target Date > 90 Days: The Pandemic has created a shortage of chips, FY20/21 closeout has been delayed. 90 days is a more realistic timeframe to cleanup the backlog of equipment and ensure staff equipment is delivered to coincide with Tempe’s return to work policies.	
Rec. # 2.1: Create and update written policies and procedures to provide written guidance on tracking and monitoring IT asset inventory from purchase through retirement.	
***Response*:** IT will begin work on 8/1/21 after the close of FY20/21	***Target Date*:** 10/1/21
Explanation, Target Date > 90 Days: This is going to be an involved IT project with collaboration from multiple IT divisions. Work will begin but this will be an ongoing effort to develop processes and more importantly oversite.	
Rec. # 2.2: Develop a tracking system for all assets coming in and going out of the warehouses.	

***Response*:** During the update written policies and procedures project, requirements will be developed to use for selection of a tracking system.	***Target Date*:** 12/1/21
Explanation, Target Date > 90 Days: Developing a tracking system will be the output of the updated written policies and procedures.	
Rec. # 3.1: Find and update the status of all assets identified in the audit as "unable to locate." Create a separate CI category to distinguish those assets that after research could not be located and are assumed to be disposed in the absence of any other documentation.	
***Response*: :** IT Admin will coordinate with Support Services and other IT divisions that track assets to complete a full hardware inventory. As part of that task, items that staff are unable to located and do not show connected to the network will be noted in the CMDB.	***Target Date*:** 10/1/21
Explanation, Target Date > 90 Days: The Pandemic has created a shortage of chips, FY20/21 closeout has been delayed. 90 days is a more realistic timeframe to cleanup the backlog of equipment and ensure staff equipment is delivered to coincide with Tempe's return to work policies.	
Rec. # 3.2: Link all assets to purchase request ticket. Do not subsequently unlink or remove them so the historical asset record is complete.	
***Response*:** This recommendation can be easily added to the procurement procedure and implemented quickly. Staff will be reminded and trained on the updated processes.	***Target Date*:** 8/1/21
Explanation, Target Date > 90 Days: N/A	
Rec. # 3.3: Resume sending palletized spreadsheets to IT Administration for items sent to the recycler so CI status can be updated from "recycle" to "auction" as for provided in the CMDB training document.	
***Response*:** This recommendation can be easily added to the procurement procedure and implemented quickly. Staff will be reminded and trained on the updated processes.	***Target Date*:** 8/1/21
Explanation, Target Date > 90 Days: N/A	
Rec. # 3.4: Obtain copy of all assets tested and update CMDB asset record and purchase ticket to accurately reflect CI status, physical location, employee name, and cost center.	
***Response*:** IT will use the physical and network asset inventory to update CMDB entries to reflect what is deployed on Tempe's network.	***Target Date*:** 10/1/21

Explanation, Target Date > 90 Days: This task will be ongoing and part of the new process and procedures. A full update will happen after the physical inventory planned for 3rd quarter 2021	
Rec. # 3.5: Remove the following data fields for items verified with the "recycled" status: employee name, cost center, and physical location to reflect that these assets are removed from the City's premises.	
Response**:** IT Admin team, in cooperation with other IT divisions that manage hardware, will work with Application Management to automate a process to update CMDB for "recycled" items to scrub indicated data fields on an automated schedule.	***Target Date*****:** 9/1/21
Explanation, Target Date > 90 Days: N/A	

1 – Warehouse Site Visits

Background

Hardy Yard is the Support Services warehouse where hardware shipments are received from the vendor and PCs, monitors, tablets, laptops, and other end user devices are stored. This typically includes everything that sits on the customer's desk.

The Network Operations warehouse is located at the Priest Yard, which is the location responsible for switches, access points, radios, routers, handheld radios, printers, and telephones. This warehouse and Information Security Office are primarily responsible for firewalls.

Police/Headquarters is the Systems and Database Administration facility responsible for larger servers, which are primarily deployed once received rather than held in stock.

Approach

We toured the Hardy Yard Warehouse and Priest Yard (Tech Center) to observe how inventory was stored and recorded and evaluated the physical safeguards over the assets.

From November 2020 to February 2021, we reviewed reports for people who were granted/denied access to the Hardy Yard and from January 2021 to April 2021 for the Priest Yard. We also evaluated if the people who gained access to the warehouses appeared reasonable based on their job duties.

There is no policy requiring annual cycle counts at the Hardy Yard and Priest Yard warehouses. Routine physical inventories of warehouse contents help ensure that all assets are in the assigned locations, errors in the CMDB are detected and reduce the risk of asset misappropriation.

We requested documentation for any periodic physical inventory counts conducted previously. There was no written documentation provided for any physical inventory counts conducted including results and any follow up performed. During our physical inventory observation, we noted items in stock at the Hardy Yard warehouse that were recorded in CMDB as "deployed" and also listed the incorrect department and cost center. This is an example of one type of mistake that could be detected if an annual physical inventory count was performed.

IT Support Services and Network Operations staff are responsible for granting permission access and are responsible for physical custody of the assets. According to staff, these permissions can be made without supervisory review and approval. This could result in granting unauthorized access which may go undetected and could result in misappropriation of City assets.

During interviews with staff, they stated permission could be made without supervisory review and approval but as a matter of practice they would not do that. Our review of the access reports evidenced only people who gained access to the warehouse appeared reasonable based on their job duties, so it appears no unauthorized access was granted for the time period reviewed.

During physical inventory site visits, we noted physical safeguards existed to protect the City's assets; however, assets need to be better organized to avoid comingling obsolete and current inventory. This helps to reduce the risk of misappropriation of City's assets and fosters a more efficient operation.

On March 24, 2021, we toured the Hardy Yard Warehouse and noted the front door and the three sets of interior doors require badge access to gain entry. The warehouse also had a garage door which can only be opened manually from the inside. There is a latch which secures the door. During posted business hours, there is someone at the warehouse. Pallets are placed in a locked room while waiting to be picked up by 3rd party vendor. The warehouse is organized in a separate area with items that are being worked on and other items waiting to be deployed. We noted some obsolete inventory comingled with current inventory.

On April 7, 2021, we toured the Priest Yard Warehouse. We noted the front door required a badge access and the alarm must be disarmed upon entry. There were many items that needed to be palletized and sent to be recycled. Many items were comingled with new assets. From our visit, we assess this facility needs to be better organized.

The Priest Yard operates more as a stock room rather than a warehouse. There is no documentation recording the specific items located at this warehouse. Assets coming in and going out are not tracked. The Tech Center Inventory Control Sheet (TCICS) is hanging on a clipboard to the locked cages and the last entry was March 16, 2016. This sheet was designed to track purchase orders, delivery of assets, work orders and inventory assets. Because the staff is not using a mechanism to track the movement of inventory in and out of the warehouse, there is not a full accounting of what is "in stock" at any point in time. This includes Police and Fire radios stored in this warehouse which are estimated to cost an average of $5,000. Although the radios are stored in locked cages, the lack of formal processes to track these portable items makes them vulnerable to misappropriation.

During the refresh process that occurs every 4 to 5 years, only the items being refreshed are updated in the CMDB. Without a more frequent matching of all assets from the field to the asset record, inaccuracies will continue to go undetected and result in an inaccurate count and inventory valuation.

Expanding the refresh process to include all assets in the area where the refresh is being performed is a more robust process than limiting the accounting to only assets being refreshed. This would allow for an opportunity to verify the accuracy of all assets in the area to the system to ensure all data fields are entered correctly and completely in the CMDB.

For instance, we noted the purchase price data field was blank on numerous records on the RemedyForce report generated on November 5, 2020 from which our testing was conducted. This results in an understated inventory value. In another example, according to the Network Operations Supervisor, the inventory purchase price was recorded incorrectly with a purchase price of $650,000 instead of $50,000, which would result in an overstated inventory value. We were unable to verify this discrepancy amount as the item was converted from the Hansen system, so no supporting documentation was available for review. During our inventory observation, we found assets in stock that were not recorded in the CMDB, this has the effect of understating the item count and inventory value. These examples highlight the importance of taking the opportunity to review all of the inventory in an area during the refresh process and update the CMDB with the correct information.

Recommendations

1.1 Perform periodic physical inventory audits for all assets (not just refresh items).

1.2 Research the possibility of further limiting the number of employees with the authority to add and modify permissions for granting access to the warehouses. Formalize periodic supervisory review of access reports to detect any irregularities.

1.3 Organize all warehouses and ensure recycled items are palletized and removed from warehouse once a pallet is full.

2 – IT Asset Management

Background

Beginning in 2015, all hardware tracked in the CMDB must be purchased through the established process as detailed in the "IT Purchase Process for Hardware, Software, and Services" procedure. RF provides a process through which customers can purchase technology-related products. Assets/Configuration items (CIs) are linked to the purchase request ticket in RF Request Fulfillment System. The following table identifies the events and responsible party once item is received through retirement.

Table No. 2.1
Hardware Lifecycle

Event	Responsible
Hardware is entered as "stock" in CMDB.	IT Admin
Hardware is installed and updated in CMDB.	IT Tech
Changes are updated as they occur (e.g. change of ownership/location or taken to the Warehouse)	IT Tech
Disposal of hardware – upon receipt of palletized spreadsheet	IT Admin

Assets - Purchased
If an asset needs to be purchased, the IT Technician obtains a quote and manages the request through the IT Purchase Process from inception to closure. Before sending the invoice to Accounting for payment, IT Administrative Senior Management Assistant verifies invoice, cost center, account and cost. Payment is not made until asset is linked to the purchase request ticket as received.

Assets – Received and Deployed
When assets arrive at the Hardy Yard warehouse, they are logged, tagged (mainly Support Services assets) and configured in CMDB before being assigned to an employee or installed in the production environment. Once the asset is deployed, an IT Technician needs to update applicable data fields such as CI status, employee name, physical location, sub account/cost center to accurately reflect the location of the asset.

Assets – Periodic Inventory Count and the Refresh Process
Refresh refers to swapping out old equipment with new equipment on a regular and systematic basis an average of every 4 to 5 years for certain assets (primarily personal computers, laptops, tablets, monitors, and radios that are deployed).

Approach

We performed staff interviews and reviewed policies and procedures (see Table No. 2.2 below) and CMDB 101 PowerPoint training document to gain an understanding of roles and responsibilities regarding inventory management and tracking of those assets. We reviewed process flows to identify the controls in place to ensure assets are accurately tracked in the inventory management system and to ensure proper segregation of duties.

Results

The process flow for the hardware lifecycle includes proper segregation of duties among functions of custody, accounting, recordkeeping and operations.

Clients making technology purchase requests provide their cost center and account and verify available funds when placing orders with IT staff. The purchase process template began in 2015 as detailed in the "IT Purchase Process for Hardware, Software and Services" procedure. The Hardware Task Template is manually attached to the purchase request by IT along with a price quote. The tasks are automatically executed as follows:

1. IT Administration staff – places the hardware order.
2. IT Hardy Yard Warehouse staff - receives the hardware order.
3. IT Administration staff - enters the hardware order into CMDB.
4. IT Technician - installs the hardware and updates the CMDB, asset record.
5. IT Administration - after installation, verifies the required information fields (CI status, employee name, sub account/cost center and physical location) have been populated correctly into CMDB.
6. IT Administration - closes individual task and IT Technician closes purchase request ticket.

Next, CMDB automatically sends an email to IT staff to let them know all tasks have been completed and the ticket owner can close the ticket and email is sent to the customer communicating the ticket has been closed.

The development of comprehensive written policies and procedures pertaining to assets after they are deployed from stock or movement of inventory outside of the purchase process would help ensure the information recorded in the asset management system was current, complete and accurate.

To increase the effectiveness of internal controls, continuous monitoring of the accuracy of the asset inventory record and adjustments to internal policies and procedures is necessary to provide guidance for tracking and monitoring of assets during the hardware lifecycle. Employees should receive training and be required to sign off that they have read and understood the procedures. Table 2.2 lists the existing policies and procedures associated with the hardware lifecycle provided by division.

Table No. 2.2 Division Provided Policy and Procedure?				
Title	**Support Services**	**Network Operations**	**Information Security Office**	**System Administration**
IT Purchasing Policy[1]	Yes	Yes	Yes	Yes
IT Purchase Process for Hardware, Software, and Services	Yes	Yes	Yes	Yes
IT Procedures for Updating Assets in RemedyForce	Yes	Yes	No (A)	No (A)
General Warehouse Process	Yes	No (A)	n/a	n/a
PC Refresh Warehouse Procedures – Outgoing & Incoming	Yes	n/a	n/a	n/a
Receiving	Yes	No (A)	n/a	n/a
Recycle/Auction Procedures [2]	Yes	No (A)	No (A)	No (A)
Windows Server Deployment and Retirement Checklists	n/a	n/a	n/a	Yes – references outdated systems

1The Draft IT Purchasing Policy review date was scheduled for March 18, 2018 and it has not been reviewed to date.

2Recycle/Auction process was not included in this audit scope.

(A) Systems Administration, Network Operations and Information Security has no written Recycle/Auction policy and procedure. Systems Administration does not have a written procedure for updating assets in RF. Priest Yard has no general warehouse or receiving procedures. System Administration has a Windows Server Deployment and Retirement checklist that references systems that have not been used in over six years.

While reviewing policies and procedures, we noted key areas that are not covered. The following list is not all inclusive, but rather provides some guidance on topic areas that if included in the written policies and procedures would strengthen the internal control environment for IT asset inventory.

1. Moving assets, whether from stock or deployment, processes should be detailed to ensure all assets get recorded properly in the asset record and linked to the RF ticket.
2. Replacement assets (e.g., assets received from exchanges of hardware, recalled, replaced, returned merchandise authorization) require a documented process to ensure all assets are properly recorded and linked in the CMDB. For example, if a customer has a problem with a printer which cannot be fixed, it is sent back to vendor and a replacement is received.

3. Include written guidance, for leased assets, as to which items should be included and tracked in the CMDB.
4. Create a procedure to perform a periodic physical inventory for all assets, including hard to reach assets on man poles.
5. Create documentation defining requirements for assets to be included/excluded from CMDB and what should and should not have an asset tag.
6. The process for recording monitors being taken home needs to be documented. This is especially important during these times when COVID-19 has resulted in many working from home. The verbal process, agreed to, included adding the working from home "WFH" designation to the notes field. However, this was not documented in a procedure.
7. Clarification of terms and identifying roles and responsibilities to update the inventory management system including decommissioned, recycled, and auctioned.
8. Organizational data tracking and storing requirements are not documented to ensure sensitive information is not leaked or disclosed to an unauthorized person. Staff indicated this responsibility has been delegated to the 3rd party vendor and was not reviewed as a part of this audit.
9. A process needs to be developed to collect and update City's assets from employees prior to separation from the City.
10. Establish record retention process and schedule for palletized spreadsheets, refresh schedules and other key documents used in the inventory management process.
11. Require supervisory review and approval for authorizing permissions to staff who can gain entry to the warehouses where stock is stored and formalize review of access reports to detect any irregularities.

Docking stations, monitors, laptops, tablets and recycled assets are not clearly addressed in existing governing policies and procedures. As a result, staff employ inconsistent practices when determining if these items are recorded in CMDB.

According to some IT staff, an informal decision was made that if equipment cost was less than $1,000, it may be purchased using a procurement card and not tracked in the CMDB. However, when we tested transactions, we noted assets valued at less than $200 that were recorded in the CMDB. Policies and procedures should clearly state the dollar value and other criteria used to determine if asset should be recorded in the CMDB. A cost/benefit analysis should be considered when developing criteria. The following provides some context:

Docking Stations and Monitors

During the interview process, staff indicated there was no written guidance and indicated their understanding of how and when docking stations and monitors are recorded. Some indicated it was based on dollar value thresholds ranging from $200 - $500. We noted monitors recorded in CMDB as low as $159. Some staff did have

meetings to establish asset clarifications standards, but clarity among all staff was not achieved as some were not in attendance while others walked away with different understandings as is evidenced by what dollar values are included in CMDB.

Laptops versus Tablets
Staff also had varying opinions on classifying assets as a laptop or a tablet. Some staff believe if the keyboard is separated it should be categorized as a tablet, otherwise a laptop. Other staff indicated if the asset came together (even though it can be separated) they would receive the classification of laptop. Another example was leased assets, which some staff believed should be recorded in CMDB for insurance purposes while other staff believed they should not be tracked because the City does not own the asset. In addition, there is some equipment that has very little financial value but processes sensitive information. Some staff expressed these assets should be tracked and monitored for that reason, but it is not current practice.

Recycled Assets
As stated in the CMDB 101 PowerPoint training document, warehouse employees should remove employee names and change the sub account/cost center and physical location to reflect Hardy Yard when an asset is brought to the warehouse. However, during the audit, warehouse staff indicated they were not clear regarding their responsibility to update the CMDB once items are received into the warehouse to be recycled.

IT Administration staff formerly received “palletized” spreadsheets to use as a basis for updating the CI status to “auction” and removing all relationships. According to IT Administration, a palletized spreadsheet has not been received from Hardy Yard since December 2017. Priest Yard sends their recycled items on a pallet and does not retain documentation of items sent. Hardy Yard was unable to provide documentation they sent the palletized spreadsheet to IT Administration. Without receiving this spreadsheet, IT Administration cannot update the CI status from “recycle” to “auction.” (Note: Our Transaction Testing results in Section 3 demonstrated how this lack of documentation directly impacted our ability to locate assets during audit testing).

Asset Tracking
When assets are received to be recycled, there is no documentation tracking the incoming asset. Previously, the items brought to the warehouse to be recycled were recorded on an “in sheet” which detailed serial number, item description, who brought it in and who received it and if it was updated in the CMDB by warehouse staff. According to Hardy Yard warehouse staff, a decision was made to stop using the in sheet. However, an out sheet is completed for all items coming out of stock to be deployed. Currently, there is no tracking of incoming or outgoing assets at the Priest Yard.

Recommendations

2.1 Create and update written policies and procedures to provide written guidance on tracking and monitoring IT asset inventory from purchase through retirement.

2.2 Develop a tracking system for all assets coming in and going out of the warehouses.

3 – Transaction Testing

Background

When a client order is placed with IT Administration, a purchase template is selected to initiate workflow for IT Admin to order from a vendor. A Purchase Request Ticket relates to hardware that is tracked in the CMDB. The IT Purchase process flow includes quality control procedures associated with tasks that help ensure assets are properly approved, ordered, received, entered, installed, and updated in the CMDB.

IT Admin records the configuration item (CI) as "stock". This field must be updated for any changes (return to vendor, deployed, recycled) in CI status. When CI is deployed, the IT Technician populates the physical location, employee name and asset tag fields, if applicable. All CIs must be assigned to a sub account/cost center. The sub account/cost center must be changed, if necessary, when a CI is moved from one person to another. The IT Technician verifies all CIs are linked before closing the deploy task. After all individual tasks in the purchase process workflow template are closed, the purchase service ticket is closed.

Approach

We selected 82 asset records and verified the accuracy of the following data fields:

- CI status (e.g., stock, deployed, disposed, recycled, transferred)
- Asset tag (if applicable)
- Physical location
- Employee name
- Sub account/cost center

On a test basis, we verified the purchase order matched the quote and purchase was properly approved and adequately supported. We also reviewed information on purchase request ticket to verify if it was consistent with the asset record and verified the vendor invoice evidenced proper supervisory approval prior to submittal to accounting for payment.

Results

The hardware purchase template provides a strong framework to ensure the assets at the time of purchase are properly recorded in the CMDB. However, CMDB data fields need to be updated each time the information for the CI changes to ensure the asset record is accurate.

Fifteen of the 82 transactions tested had the correct CI status, sub account/cost center, physical location, and employee name in the CMDB. The other 67 transactions had varying levels of inaccuracies across all data fields. See Appendix A for summary results of testing.

After the initial recording of CI, it is important that IT staff update CMDB to ensure any changes of the CI status are accurately reflected in the CMDB. For instance, if the CI status of "deployed" is not correct and it should have been "recycled", asset inventory count and value are overstated in the CMDB. The following categories provide detailed explanations which primarily contributed to the inaccuracies in the CMDB:

Forty-nine out of the 82 (60%) CI statuses tested were incorrect. After a concerted effort to locate the CIs, 12 could be located, 29 assets were not located and had no supporting documentation and 8 assets were not located but we located supporting documents:

Group 1 – 12 Assets Located

During testing, we noted assets disposed of (returned to vendor without being deployed) were incorrectly listed as either "deployed" or "received" in the CMDB. This results in the item count and inventory value being overstated. We reviewed the credit memos noting description, dates and amounts as well as notes in the Purchase Service Tickets. We also contacted employees where the asset was listed as deployed. These employees confirmed they did not have possession of the item(s) and corroborated they were returned to the vendor.

In another example, the CI status was recorded as "being assembled" instead of "deployed." When an asset is being prepped for deployment, the CI status indicates "being assembled." We noted some items such as firewalls where this category makes sense for a period of time, but once ready to be deployed should be categorized as "stock" or "deployed." We also noted items such monitors that do not require any preparation prior to deployment for which a status of "being assembled" was incorrectly selected. In these instances, we located the asset and notated the serial number and asset tag, if applicable, without exception.

Group 2a – 29 Assets Not Found and No Supporting Documentation

Staff indicated many of the items in this category were converted in 2013 as part of the data migration from Hansen to RF. Based on a manufacturer name no longer in use and/or the age of the asset, staff speculated these items were sent to auction. These assets require further research before updating the CMDB.

In another instance, staff stated the asset could not be located because it was recalled by the vendor (returned merchandise authorization). However, there was no supporting documentation regarding the recall and it could not be located.

In another case, a similar device was deployed out of stock and had no asset record completed. This is an example of an item in stock which is deployed but not recorded in the CMDB. Hardware should not be deployed until it is entered into the CMDB and the "deploy" task is created. During testing, staff indicated knowledge that access point hardware were deployed prior to recording in CMDB. During testing, we noted an iPad had purchase documentation, making it reasonable to assume the asset was deployed;

however, there was no service connected to the phone number listed for this iPad in the CMDB. This asset was also not located. In another instance, the Network Operations Supervisor believes a voice gateway router analog was deployed (in service and active) but could not find it.

Group 2b – 8 Assets Not Found but Supporting Documentation

During testing, we noted assets with a CI status of "deployed" "repair" or "down" that should have been recorded as "recycled" and then updated to "auction." Although these items could not be located, they were included on a palletized spreadsheet listing indicating the asset left City premises and was picked up by a 3rd party vendor to be recycled. We noted many items on the palletized hardware recycle form spreadsheet with a completion date of 1/30/2021 noting assets were received to be recycled but were never entered into the CMDB. There were 50 asset tags listed on the spreadsheet and 14 zero clients which were not recorded in the CMDB.

Hardy Yard staff completes a spreadsheet detailing serial number, asset tag (if applicable) and notes the date the item is picked up by the contracted 3rd party vendor who takes the City's assets labeled recycled and sells them at auction. Once Hardy Yard warehouse staff completes the palletized spreadsheet, it should be forwarded to IT Administration who are responsible for updating the CI status to "auction" and remove the associated data fields so the CMDB inventory count and value are properly reduced. According to IT Administration staff, they have not received a spreadsheet in over 4 years even though the City received checks from the 3rd party recycler as recently as March 2021.

Employee name, physical location, and/or cost center data fields were often either left blank or not updated accurately in CMDB. This makes locating assets increasingly difficult, time consuming, or impossible.

When an asset is transferred from one person to another, the employee name is not always updated to reflect who is in possession of the asset. In some instances, we noted the asset was assigned to a person who is no longer employed with the City. In another instance, the CI status of the asset was "repair" and employee name listed was incorrect. Upon further investigation, that personal computer was not being repaired but instead was deployed in a cubicle which had been vacant for over one year.

During testing, we noted many instances where Support Services populated the "short description" field to provide detailed location information that would be helpful in identifying the precise location of the asset rather than just the general vicinity. Support Services could share this helpful practice with other divisions in training so others can benefit from it.

As of November 5, 2020, the CMDB report indicated there were 4,691 items with the CI status of "recycled." Because the CMDB was not updated to reflect the auction status, the total inventory count and respective dollar values are overstated. We could not quantify the dollar amount because the purchase price field was often left blank.

During our testing, we noted CI status was not updated from “recycled” to “auction.” IT Admin did not receive completed palletized spreadsheets and therefore did not update the CI status to auction. IT Administration has not received any spreadsheets in over 4 years. There are many instances where the asset left the City 3 – 20 years ago but remain in the inventory management system with Hardy Yard recorded as the physical location.

During testing, we noted when assets were initially purchased, they were properly linked to the service ticket. However, when assets were replaced or moved from one employee to another, those assets were not always linked to the service ticket or linked to the wrong service ticket. This makes it more time consuming and difficult to locate assets.

For example, during testing we noted an asset tag incorrectly linked to the wrong purchase request ticket with no explanation or rationale why this occurred. In other instances, more than one item was installed but not linked to the purchase request ticket or linked and then removed without explanation. Also, we noted a virtual server was linked to the service ticket but not the physical server. Based on the notes in the purchase request ticket and the closed tasks, it appears after installation the asset was improperly unlinked from the purchase request ticket.

Purchase request ticket information was not consistent with information documented in the asset record. Support Services uses the “notes detail” section of the ticket to provide history of the asset and detail which is helpful in locating assets especially if the asset record does not reflect current information.

Staff indicated discrepancies with the purchase request ticket can happen when an asset is found and not all data fields are properly populated for accurate tracking of the asset in the CMDB. In some of the assets tested, there was no information in the CMDB except the serial number and the asset could not be located. In another instance, the asset record recorded a CI status of “down” while the purchase service ticket stated the asset was pulled from service and the City did not have it effective March 6, 2020.

During testing, we noted the purchase request ticket identified equipment with many “owners” but did not have a current employee assigned to it. The equipment changed hands and was not updated in CMDB to reflect changes in ownership. It is important that all CIs are linked to the purchase request ticket, which can be helpful in finding the asset when the asset record fields are not populated or are incorrect. Without the employee’s knowledge, the location of the asset would have been unknown.

During testing, we noted purchase orders were properly processed and approved in accordance with policies and procedures with one minor exception.

We judgmentally selected 40 purchase orders and matched the information to the quote, invoice, packing slips and purchase request without exception. We noted one invoice where the IT Administrative Supervisor did not evidence their review. We noted information matched.

Recommendations

3.1 Find and update the status of all assets identified in the audit as “unable to locate.” Create a separate CI category to distinguish those assets that after research could not be located and are assumed to be disposed in the absence of any other documentation.

3.2 Link all assets to purchase request ticket. Do not subsequently unlink or remove them so the historical asset record is complete.

3.3 Resume sending palletized spreadsheets to IT Administration for items sent to the recycler so CI status can be updated from “recycle” to “auction” as for provided in the CMDB training document.

3.4 Obtain copy of all assets tested and update CMDB asset record and purchase ticket to accurately reflect CI status, physical location, employee name, and cost center.

3.5 Remove the following data fields for items verified with the “recycled” status: employee name, cost center, and physical location to reflect that these assets are removed from the City’s premises.

Attachment A – Transaction Testing

Specific Data Fields Tested By Division				
Data field tested was accurate?	**Support Services**	**Systems Administration**	**Network Operations[1]**	**Total**
CI Status				
Yes	25	3	5	33
No	32	4	13	49
Total	57	7	18	82
Employee Name				
Yes	16	4	4	24
No	33	3	13	49
Not required	8		1	9
Total	57	7	18	82
Physical Location				
Yes	21	4	6	31
No	36	3	11	50
Unable to determine			1	1
Total	57	7	18	82
Sub Account / Cost Center				
Yes	23	5	10	38
No	31	2	3	36
Unable to determine	3		5	8
Total	57	7	18	82
Service Ticket				
Yes	26	2	9	37
No	13	1	5	19
Not applicable (Hansen)	18	4	4	26
Total	57	7	18	82
Asset Tag				
Yes	50			50
No	4			4
Not applicable[2]	1	n/a	n/a	1
Not required/gray area	2			2
Total	57			57

1 Information Security Office was not listed separately because the CMDB report identified Network Operations as contact for the firewalls. There were two firewalls tested and the Information Security Office provided the necessary information.

2 In general, CIs belonging to the Support Services Division are given asset tag numbers. Other CIs belonging to System Administration and Network Operations Division are not required to have an asset tag number.

Scope, Methods, and Standards

Scope

As of November 5, 2020, we judgmentally selected 82 IT assets inventory from the CMDB.

Methods

We used the following methods to complete this audit:

- Reviewed policies and procedures and IT inventory records.
- Interviewed staff to gain an understanding of the processes related to the inventory from purchase request to retirement.
- Reviewed access reports related to doors accessing the room(s) containing the inventory.
- Traced purchased items into inventory management system.
- Performed (virtual) inventory counts on a sample of items.

Unless otherwise stated in the report, all sampling in this audit was conducted using a judgmental methodology to maximize efficiency based on auditor knowledge of the population being tested. As such, sample results cannot be extrapolated to the entire population and are limited to a discussion of only those items reviewed.

Standards

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. IAO is independent per the GAGAS requirements for internal auditors.