

Albany Water Board

Software Management

MARCH 2021



OFFICE OF THE NEW YORK STATE COMPTROLLER
Thomas P. DiNapoli, State Comptroller

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Report Highlights

Albany Water Board

Audit Objective

Determine whether software installed on Albany Water Board (AWB) computers and mobile devices is appropriate and necessary.

Key Findings

Software installed on AWB computers and mobile devices is not always appropriate and necessary.

Specifically, officials did not:

- Ensure only appropriate and necessary software was installed on computers and mobile devices. We found unnecessary software on 60 computers (97 percent) and six mobile devices (32 percent) including gaming, streaming and shopping software.
- Establish controls to prevent computer and mobile device users from downloading applications from application stores.
- Maintain application and software inventories for all mobile devices.

Key Recommendations

- Ensure that only appropriate and necessary software and applications are installed on computers and mobile devices.
- Request that the Information Technology (IT) Department disable the application store on mobile devices.
- Perform an inventory of applications installed on unmanaged mobile devices.

AWB officials generally agreed with our recommendations and have initiated, or indicated they planned to initiate corrective action.

Background

The AWB is a component unit of the City of Albany (City).

In October 1987, the AWB and the City entered into an operating agreement for the operation and maintenance of the City's water and sewer system. Under the operating agreement, the City agreed to provide all employees and necessary support to administer, operate and manage the water and sewer system, including computer and network support.

The AWB is composed of five members appointed by the City Mayor. The AWB Chairman is elected by the members and is assisted by a Commissioner (appointed by Mayor). The Commissioner is responsible for the day-to-day operations.

The City's Chief Information Technology Officer (CITO) is responsible for managing all City computers and mobile devices, including those assigned to the AWB, and ensuring software installed is necessary and appropriate.

Quick Facts

Computers	62
Mobile Devices	76
Employees	145

Audit Period

January 1, 2020 – September 30, 2020

Software Management

The City has a policy manual to communicate to employees the City's policies and guidelines related to the use of IT with the goal of limiting access to only authorized users, protecting the integrity of computer systems and preventing loss of information or inoperability of computing facilities. To supplement the City's policies, the AWB also has a policy manual that includes policies for acceptable use of computers and cellphones.

How Should Officials Manage Software On Computers and Mobile Devices?

It is essential that only appropriate and necessary software and applications are installed on computers and mobile devices to reduce the risk of unwanted consequences and unnecessary costs that could result from unauthorized software (i.e., potential network failure/attack or lost productivity from use of non-business related applications during work hours). Officials must have an understanding of the software and applications installed on computers and mobile devices, how it is used and how best to track it. This can be done, in part, by maintaining complete and accurate detailed inventory records of software and applications installed on computers and mobile devices, regularly reviewing computers and mobile devices to identify installed software and taking action to remove any unauthorized software and applications.

The City's policy and procedure manual expressly prohibits employees from installing software on any part of the City's computer systems (computers, portable, peripheral or the network), unless prior written approval is given by the CITO. Also, staff issued a mobile device are required to sign an Information Technology Mobile Device Security Policy, which states, "Employees shall not install applications not approved by the IT Department." The policy also states, "The Device cannot contain unauthorized applications such as audio/video streaming applications."

Installed Software and Applications Were Not Always Appropriate and Necessary

In May 2019, the City's IT Department implemented a device management system to manage computers and mobile devices. Among other things, this system records the device, software/applications installed, software version and the last time the device communicated with the system. If the device management system detects that a new application was installed on a computer since the user's last login to the network, an alert is sent to the network administrative team. However, according to the CITO, while they manage all computers connected to the City's network, they do not manage mobile devices issued prior to June 2019. As a result, no application inventories are maintained for these mobile devices. According to records provided by the CITO, 62 computers and 76 mobile devices

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(cell phones and tablets) are assigned to the AWB. All 62 computers and 37 of the 76 mobile devices are managed by the device management system. As a result, application inventories are not maintained for 39 mobile devices.

Computers – Due to the number of software and applications installed on computers, we examined the software inventories to determine whether unnecessary software, such as games, shopping and movie/TV streaming software, was installed. We found that 60 of the 62 computers had games, streaming, shopping and/or other non-business software installed. While we observed some games were only available and executable under administrative privileges and the City’s network prevented the execution of the streaming software installed, these applications could pose vulnerabilities that could be exploited.

According to the CITO, prior to adding a new computer to the network, the IT Department upgrades the operating system and indicated some of these unnecessary applications were preinstalled with the original operating system and overlooked when the computers were issued. Further, any unnecessary applications installed prior to implementing the device management system would not have generated an alert to the CITO. Additionally, the IT Department also did not disable the application stores (online portals used to purchase and download software programs) on computers connected to the City’s network until August 2020. As a result, computer users were not prevented from installing applications from the application store, even though prohibited by written policy and therefore, preinstalled unnecessary applications went unnoticed.

Mobile Devices – We reviewed 19 mobile devices (10 managed by the IT Department and nine unmanaged) to determine whether software installed was appropriate and necessary. We found six mobile devices (including one managed) assigned to AWB staff had unnecessary applications installed including games, shopping and movie/TV streaming applications that were not listed among the standard applications approved by the IT Department and pushed to mobile devices.

Additionally, we selected 10 of the 19 mobile devices tested to determine if signed user acknowledgements were on file for the Information Technology Mobile Device Security Policy. AWB and IT Department staff were unable to locate two of the 10 policy acknowledgments. According to the CITO, before issuing a new mobile device, IT Department staff will install the device management system software, then push approved applications to the new mobile device and periodically push security updates. However, the IT Department does not disable the application store on mobile devices, and users are not prevented from creating an application store account and installing applications.

...application inventories are not maintained for 39 mobile devices.

...the IT Department also did not disable the application stores on computers connected to the City’s network until August 2020.

The CITO told us that due to other priorities, the IT Department does not generally review applications installed by users unless they receive an alert from their network security system or if a concern is raised by a department. As a result, there is an increased risk that unnecessary applications are installed on mobile devices and, without a complete and accurate application inventory for all mobile devices, the AWB cannot be assured security patches are properly installed on these devices. When patches are not installed, known software vulnerabilities could be exploited resulting in data breaches or compromised IT systems.

What Do We Recommend?

The CITO should ensure:

1. That only appropriate and necessary software and applications are installed on AWB computers and mobile devices and that security patches are properly installed.
2. Signed user acknowledgements for the Information Technology Mobile Device Security Policy are obtained and on file for all AWB staff issued a mobile device.

AWB officials should:

3. Request that the IT Department disable the application store on mobile devices assigned to the AWB.
4. Request that the IT Department manage all AWB mobile devices and perform an inventory of applications installed on all AWB mobile devices.

Appendix A: Response From Albany Water Board Officials



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March 1, 2021

██████████
Principal Examiner
NYS Office of the State Comptroller
Division of Local Government and School Accountability
One Broad Street Plaza
Glens Falls, NY 12801

Re: Response to Draft Report of Examination 2020M-159

Dear ██████████

On behalf of the Albany Water Board of Directors, this letter serves as the official written response regarding the findings and recommendations contained in the Office of the New York State Comptroller's Draft Software Management report. The audit process took place from January 1, 2020 to September 30, 2020.

The Albany Water Board would like to thank the Office of the State Comptroller and their staff for the review. The Board agrees with the findings in the report. This response will also serve as our Corrective Action Plan.

Audit Recommendation:

Ensure that only appropriate and necessary software and applications are installed on computers and mobile devices.

Implementation Plan of Action:

At the direction of the Albany Water Board, the City's IT Team implemented scripting that removed all software identified in the Audit as unnecessary from all Desktop and mobile devices.

Implementation Date:

March 2021

Audit Recommendation:

Request that the Information Technology (IT) Department disable the application store on mobile devices.

March 1, 2021

[REDACTED]

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Implementation Plan of Action:

At the direction of the Albany Water Board, the City's IT Team has disabled the user's ability to access the application stores on all mobile devices. All applications will have to be approved by the Commissioner of the Albany Water Departments and the IT department. Upon approval, the IT team will push the application from its Mobile Device Management software application to the mobile device.

Implementation Date:

March 2021

Audit Recommendation:

Perform an inventory of applications installed on unmanaged mobile devices.

Implementation Plan of Action:

At the direction of the Albany Water Board, the City's IT Team has replaced and/or installed Mobile Device Management software on all identified unmanaged devices.

Implementation Date:

March 2021

Audit Recommendation:

Signed user acknowledgements for the Information Technology Mobile Device Security Policy are obtained and on file for all AWB staff issued a mobile device.

Implementation Plan of Action:

The City's IT Team has implemented an electronic acknowledgment form that is required to be completed before the issuance of any mobile device.

Implementation Date:

March 2021

Respectfully,

Charles G. Houghton III, Chairman – Albany Water Board

- c. Mark Dorry, Chief Information Technology Officer
- Joseph E. Coffey, Jr., P.E., Commissioner
- Thomas Dufresne, Chief Fiscal Officer

Appendix B: Audit Methodology and Standards

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

- We reviewed AWB and City policies and procedures and interviewed AWB officials and the City's IT Department staff to gain an understanding of the process used for maintaining the software and application inventories for computers and mobile devices.
- We reviewed the inventory of software and applications installed on all 62 computers assigned to the AWB to determine whether unnecessary and inappropriate software was installed. To ensure that the software inventories provided were reliable, we used our professional judgment to select 12 computers, observed IT Department staff remote in to those computers and verified that the software installed agreed to the inventory provided.
- We used our professional judgment to select 10 mobile devices assigned to AWB users and managed by the City's IT Department to determine whether applications installed on those devices were appropriate and necessary. To ensure the application inventory was reliable, we used our professional judgment to select five of these 10 mobile devices, obtained copies of screen shots showing all installed applications and verified that the applications installed agreed to the inventory provided.
- We used our professional judgment to select nine unmanaged mobile devices assigned to the AWB and requested copies of screen shots showing all installed applications to determine whether unnecessary and inappropriate software was installed.
- We used our professional judgment to select 10 devices to determine whether the assigned user had a signed user acknowledgement for the Information Technology Mobile Device Security Policy on file.

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

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

The Board has the responsibility to initiate corrective action. A written corrective action plan (CAP) that addresses the findings and recommendations in this report should be prepared and provided to our office within 90 days, pursuant to Section 35 of General Municipal Law. For more information on preparing and filing your CAP, please refer to our brochure, *Responding to an OSC Audit Report*, which you received with the draft audit report. We encourage the Board to make the CAP available for public review in the AWB's office.

Appendix C: Resources and Services

Regional Office Directory

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

Cost-Saving Ideas – Resources, advice and assistance on cost-saving ideas

www.osc.state.ny.us/local-government/publications?title=&body_value=&field_topics_target_id=263196&issued=All

Fiscal Stress Monitoring – Resources for local government officials experiencing fiscal problems

www.osc.state.ny.us/local-government/fiscal-monitoring

Local Government Management Guides – Series of publications that include technical information and suggested practices for local government management

www.osc.state.ny.us/local-government/publications?title=&body_value=&field_topics_target_id=263206&issued=All

Planning and Budgeting Guides – Resources for developing multiyear financial, capital, strategic and other plans

www.osc.state.ny.us/local-government/resources/planning-resources

Protecting Sensitive Data and Other Local Government Assets – A non-technical cybersecurity guide for local government leaders

www.osc.state.ny.us/sites/default/files/local-government/documents/pdf/2020-05/cyber-security-guide.pdf

Required Reporting – Information and resources for reports and forms that are filed with the Office of the State Comptroller

www.osc.state.ny.us/local-government/required-reporting

Research Reports/Publications – Reports on major policy issues facing local governments and State policy-makers

www.osc.state.ny.us/local-government/publications?title=&body_value=&field_topics_target_id=263211&issued=All

Training – Resources for local government officials on in-person and online training opportunities on a wide range of topics

www.osc.state.ny.us/local-government/academy

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