Office of Inspector General | United States Postal Service

Audit Report

Postal Service Management of End-of-Life Devices

Report Number IT-AR-19-006 | September 16, 2019

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Highlights

Objective

Our objective was to determine whether the U.S. Postal Service is effectively managing End-of-Life (EOL) network devices. The scope of our review was information technology (IT) network devices [redacted] that are connected to the Postal Service's IT network and identified as EOL.

The Postal Service's IT infrastructure includes thousands of routers, switches, virtual private network gateways, firewalls, voice over internet protocol equipment, and other devices that support the delivery of business systems and IT-enabled processes. These network devices must be monitored, maintained, and replaced appropriately to provide a high-level of network performance and prevent unwanted outages.

EOL is a term used for devices that reach the end of their life cycle, indicating the end of the devices' useful life from the vendor's point of view. The vendor's EOL notification process typically consists of a series of activities, such as end-of-sales, end of software maintenance, end of service contract renewal, and end of support that, once completed, makes a device obsolete from the vendor's perspective. Once obsolete, a device is not sold, repaired, maintained, or supported. There are many reasons why suppliers make a device obsolete, including market demands, technology innovation, or the device simply matures over time and is replaced by functionally-richer technology.

Replacement of network devices does not need to follow a vendor-based schedule. Replacements should follow a consistent policy set by the organization with device-specific, risk-based replacement plans.

What the OIG Found

We found that the Postal Service is not always effectively managing its EOL network devices. Specifically, the management and replacement process is sometimes reactive and at times does not follow a risk-based approach. Postal Service records indicate that currently [redacted] percent) devices on the Postal Service's IT network are at or past their EOL. Further, by the end of 2021, [redacted] percent) of the Postal Service's current network devices will be at their EOL and may need to be replaced.

The Postal Service's reactive network device replacement process is in place because it did not have a policy, strategy, or a risk-based replacement plan for EOL devices. In March 2019, prior to our fieldwork, Telecom Services began developing a strategic framework for managing EOL network devices, which requires each Telecom team to develop device-specific replacement plans in their area.

Additionally, Telecom Services is enhancing its current Telecommunications Integrated Postal Network vendor contract, which should include requirements for addressing EOL device management. Postal Service management has set a [redacted]

> *"Replacements should follow a consistent policy set by the organization with device-specific, risk-based replacement plans."*

Without a risk-based EOL network device strategy and replacement plan, the Postal Service may not replace the most critical EOL devices in a timely and cost-effective manner. This could result in loss of support or functionality, reduced productivity, unplanned outages, and security risks to the Postal Service's IT network.

What the OIG Recommended

We recommended the Postal Service:

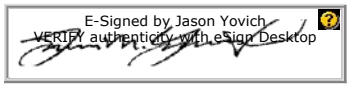
- Develop and implement a policy to effectively manage network EOL devices.
- Complete the EOL 2019 Telecom Strategy and device specific risk-based replacement plans.
- Ensure the Telecommunications Integrated Postal Network [redacted] that reflect the new approved policies and strategies.

Transmittal Letter

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

September 16, 2019

MEMORANDUM FOR: PRITHA N. MEHRA,
VICE PRESIDENT, INFORMATION TECHNOLOGY



FROM: Jason M. Yovich
Acting Deputy Assistant Inspector General
for Technology

SUBJECT: Audit Report – Postal Service Management of End-of-Life Devices (Report Number IT-AR-19-006)

This report presents the results of our audit of the U.S. Postal Service's Management of End-of Life Devices. (Project Number 19TG010IT000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Sean Balduff, Acting Director, Information Technology, or me at 703-248-2293.

Attachment

cc: Postmaster General
Executive Vice President, Chief Information Officer
Corporate Audit Response Management

Results

Introduction/Objective

This report presents the results of our self-initiated audit of the U.S. Postal Service's Management of End-of-Life (EOL) Devices (Project Number 19TG010IT000). Our objective was to determine if the Postal Service is effectively managing EOL network devices. The scope of our review was information technology (IT) network devices [redacted] that are connected to the Postal Service's IT network and identified as EOL. See Appendix A for additional information about this audit.

Background

The Postal Service's IT infrastructure includes thousands of routers, switches, virtual private network gateways, firewalls, voice over internet protocol equipment, and other devices that support the delivery of business systems and IT-enabled processes. These network devices must be monitored, maintained, and replaced appropriately to provide a high level of network performance and prevent unwanted outages.

EOL is a term used for devices that reach the end of their life cycle, indicating the end of a device's useful life from the vendor's point of view. The vendor's EOL notification process typically consists of a series of activities, such as end-of-sales, end of software maintenance, end of service contract renewal, and end of support that, once completed, makes a device obsolete from the vendor's perspective. Once obsolete, a device is not sold, repaired, maintained, or supported. There are many reasons suppliers make a device obsolete including market demands, technology innovation, or the device simply matures over time and is replaced by functionally-richer technology.

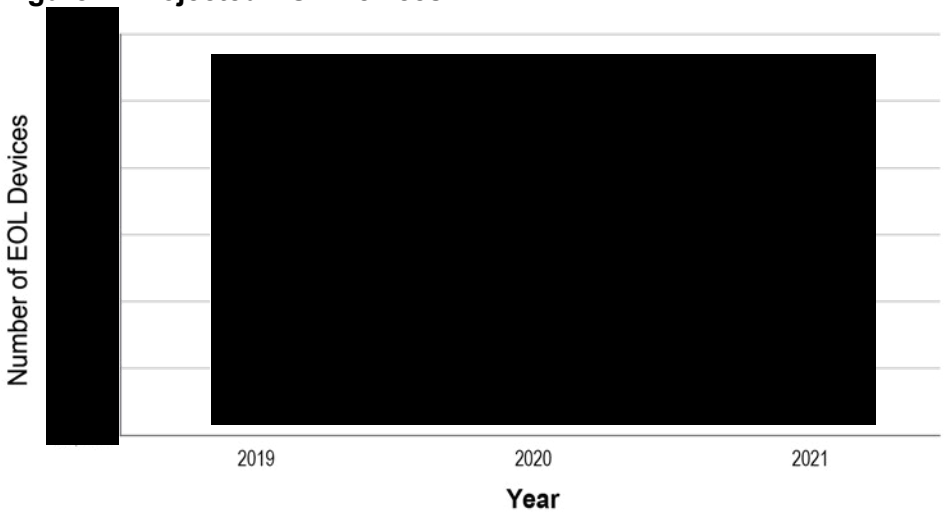
In the absence of new applications and services that can trigger the need to upgrade network equipment, most organizations simply replace older assets based on the expiration of continuing vendor support. Organizations that routinely change out equipment based on vendor EOL policies typically find they are prematurely replacing network equipment and incurring unnecessary costs.

According to best practices, organizations should take a more holistic approach to the useful life of specific network equipment as well as assess the risks associated with aging network technologies.

Finding #1: Replacement of End-of-Life Devices

We found that the Postal Service is not always effectively managing its EOL network devices. Specifically, the EOL network device management and replacement process is sometimes reactive and at times does not follow a risk-based approach. Postal Service records indicate that currently [redacted] percent) devices on the Postal Service's IT network are at or past their EOL. Further, by the end of 2021, [redacted] percent) of the current Postal Services network devices will be at their EOL and may need to be replaced (see Figure 1).

Figure 1. Projected EOL Devices



Source: Postal Service asset management data as of May 21, 2019. This chart assumes no replacement of devices or addition of new devices.

The Postal Service's reactive network device replacement process is in place because it did not have a policy, strategy, or risk-based replacement plans

1 Devices that are past EOL as of June 18, 2019.

for EOL devices. According to Gartner,[2] organizations should set a policy for network device upgrades based on IT requirements, budget constraints, technical innovation, and acceptable risk. Additionally, they should establish device-specific replacement plans for the various classes of devices in the network. Since replacement of network devices does not need to follow a vendor-based schedule, a consistent policy set by an organization with device-specific, risk-based replacement plans should be followed. See Appendix B for a sample risk approach.

In March 2019, prior to our fieldwork, Telecom Services began developing a strategic framework — the 2019 Telecom Strategy — for managing EOL network devices, which requires each Telecom team to develop device-specific replacement plans in their area. Each replacement plan would be based on factors such as business requirements, vendor EOL cycle and operating life expectancy, business risk appetite, market innovation, and operating costs.

The LAN and Wireless Telecom team has developed a process for identifying and prioritizing devices for replacement. Each location is reviewed to identify all devices and compare them against an EOL database to determine the device's EOL date.[3] A risk score is assigned to each device based on the number of years until a device reaches EOL. An unweighted average score is then determined for each device type. To give a higher priority to the sites which are larger and process more mail, the unweighted average score is applied to a facility square foot multiplier to establish a weighted risk score.[4] All Telecom teams could adopt a process like this internal Postal Service best practice for developing their respective risk-based replacement plan.

"Without a risk-based EOL network device strategy and replacement plans, the Postal Service may not replace the most critical EOL devices in a timely and cost-effective manner."

Telecom Services is [redacted] Telecommunications Integrated Postal Network (TIPN) vendor contract, [redacted]. Once the [redacted], it is imperative that the Postal Service [redacted] TIPN contracts. The Postal Service [redacted].

Without a risk-based EOL network device strategy and replacement plans, the Postal Service may not replace the most critical EOL devices in a timely and cost-effective manner. This could result in loss of support or functionality, reduced productivity, unplanned outages, and security risks to the Postal Service's IT network.

Recommendation #1

We recommend the **Vice President, Information Technology,** develop and implement an End-of-Life policy to manage all network devices.

Recommendation #2

We recommend the **Vice President, Information Technology,** complete the End-of-Life 2019 Telecom Strategy and device specific risk-based replacement plans.

Recommendation #3

We recommend the **Vice President, Information Technology,** ensure the Telecommunications Integrated Postal Network [redacted] that reflect the new approved policies and strategies.

2 Gartner article, *"Know When It Is Time to Replace Network Equipment,"* Mark Fabbi, dated June 21, 2016, and revalidated July 24, 2019. Use of this article was interspersed throughout this report.
3 EOL date corresponds to the end-of-support date by the vendor.
4 The LAN and Wireless risk scores are averaged from all wireless devices (including wireless controllers) within a facility to determine the Wireless Score. The Switch Score is determined using an identical scoring/averaging method.

Management's Comments

Management agreed with our finding and all recommendations in the report.

Regarding recommendations 1 and 2, management stated they will update existing policy to improve clarity regarding management of EOL devices and include this policy update in their Network of the Future roadmap. The target implementation date is July 31, 2020.

Regarding recommendation 3, management stated they will incorporate language from their updated EOL devices policy [redacted]. The target implementation date is July 31, 2020.

See Appendix C for management's comments in their entirety.

Evaluation of Management's Comments

The OIG considers management's comments responsive to all recommendations in the report and the proposed corrective actions should resolve the issues identified in the report.

All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed for each recommendation. Additionally, Postal Service management must provide evidence to support the mitigation efforts. Recommendations should remain open in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed.

Appendices

Click on the appendix title below to navigate to the section content.

Appendix A: Additional Information

Scope and Methodology

The scope of our review was [redacted] that are connected to the Postal Service's IT network and identified as EOL. We did not review [redacted] network devices.

To accomplish our objective, we:

- Interviewed Postal Service personnel responsible for IT network devices to gain an understanding of how EOL devices are managed.
- Reviewed current and in-process Postal Service EOL policies and procedures.
- Reviewed [redacted] governing [redacted] for the Postal Service IT network.
- Interviewed IT contracting specialists to understand [redacted]

We conducted this performance audit from April through September 2019, in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary based upon the scope of our audit. 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. The evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective and scope. We discussed our observations and conclusions with management on August 12, 2019, and included their comments where appropriate.

We assessed the reliability of network device data by validating reported EOL dates and matching devices to contracts. We determined that the data were sufficiently reliable for the purposes of this audit report.

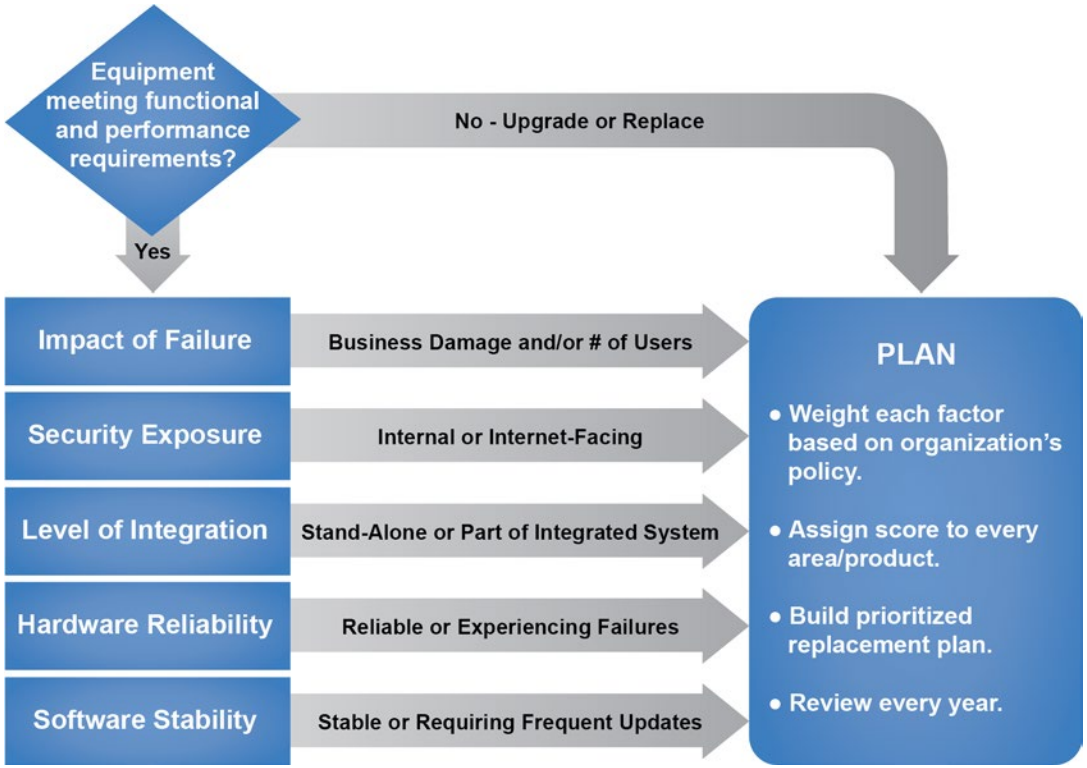
Prior Audit Coverage

The OIG did not identify any prior audits or reviews related to the objective of this audit in the last five years.

Appendix B: Risk Approach

Figure 2 is a sample process to help identify and rank network devices as they approach their expected EOL. For example, devices with higher risk levels in more dynamic environments are a higher priority for replacement than devices at the other end of the spectrum, which could remain connected to the network even when vendor support has expired.

Figure 2. Building a Network Equipment Upgrade Plan



Source: Gartner (June 2016).

Appendix C: Management's Comments

UNITED STATES POSTAL SERVICE

September 09, 2019

Lazerick Poland
Director, Audit Operations

SUBJECT: Postal Service Management of End-of-Life Devices
(Report Number IT-AR-19TG010IT000)

US Postal management agrees with the three findings as noted below.

Recommendation #1: We recommend the **Vice President, Information Technology,** develop and implement an End-of-Life policy to manage all network devices.

Management Response/Action Plan:

Management agrees with this recommendation. Management will update our existing policy to improve clarity regarding management of end-of-life devices. Management will include this update in our Network of the Future roadmap.

Target Implementation Date:
July 31, 2020

Responsible Official:
Manager, Enterprise Access Infrastructure

Recommendation #2: We recommend the **Vice President, Information Technology,** complete the End-of-Life 2019 Telecom Strategy and device specific risk-based replacement plans.

Management Response/Action Plan:

Management agrees with this recommendation. As stated in the response to Recommendation #1, management will update our existing policy to improve clarity regarding management of end-of-life devices. Management will include this update in our Network of the Future roadmap.

Target Implementation Date:
July 31, 2020

Responsible Official:
Manager, Enterprise Access Infrastructure

Recommendation #3: We recommend the **Vice President, Information Technology,** ensure the Telecommunications Integrated Postal Services Network [redacted] hat reflect the new approved policies and strategies.

Management Response/Action Plan:

Management agrees with this recommendation. Management will [redacted] elecommunications Integrated Postal Services Network contract.

Target Implementation Date:
July 31, 2020

Responsible Official:
Manager, Enterprise Access Infrastructure

Pritha N. Mehra

OFFICE OF
INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

Contact us via our Hotline and FOIA forms.
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Stay informed.

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