

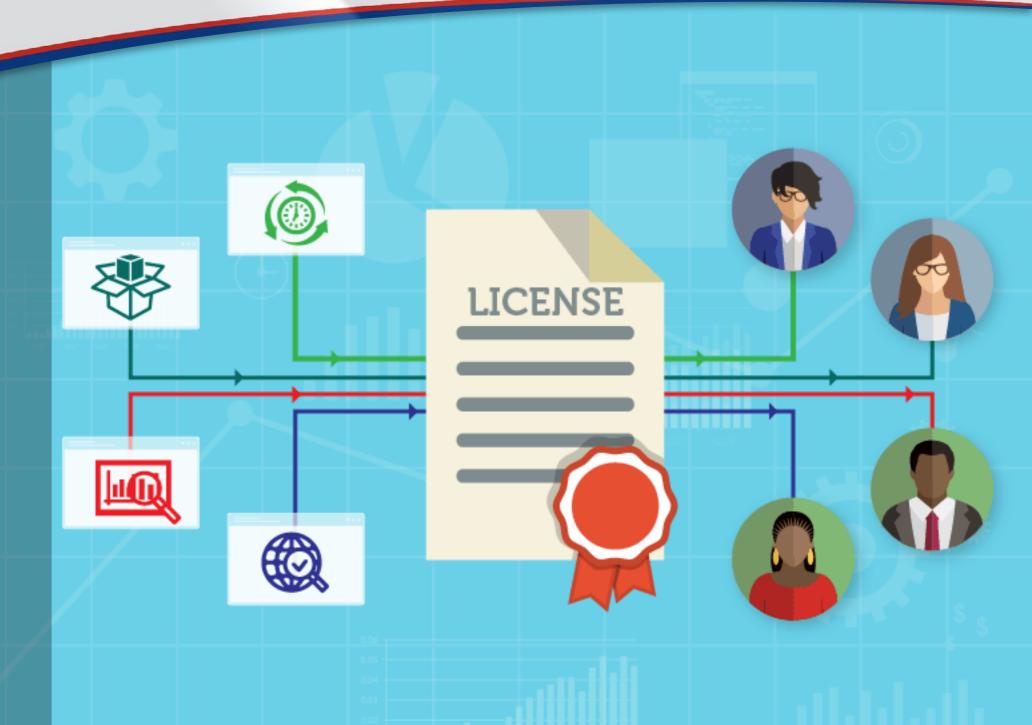
OFFICE OF INSPECTOR GENERAL UNITED STATES POSTAL SERVICE

Software License Management

Audit Report

Report Number IT-AR-17-008

September 25, 2017





OFFICE OF INSPECTOR GENERAL UNITED STATES POSTAL SERVICE

Highlights

The Postal Service has recognized the need to improve its ability to identify, document, configure, and manage software licenses throughout their lifecycle.

Background

Software licenses are agreements between suppliers and customers about the guidelines for use and distribution of software. Effective software license management allows organizations to maintain an accurate software inventory to improve accountability, security, and compliance.

In fiscal year (FY) 2016, the U.S. Postal Service's Information Technology (IT) spent about \$174 million on software licenses. Two groups are responsible for acquiring and managing these licenses: IT Software and IT Acquisition Support. The IT Software group within Supply Management is responsible for acquiring software and providing contract support and the IT Acquisition Support group within IT is responsible for software license management.

The Postal Service uses supplier contracts to purchase software licenses. Each IT software contract requires a specific provision related to system integrity and IT-related clauses based on the type of contract. Contracting officers (CO) in the IT Software group are required to incorporate the provision and clauses into software contracts.

The Postal Service has recognized the need to improve its ability to identify, document, configure, and manage software licenses throughout their lifecycle. In July 2015, the Postal Service approved an investment of about \$35 million for a software asset management program, which includes software discovery, centralized inventory license management, and a new IT Asset Management group within IT with the responsibility for making strategic software-related decisions.

Our objective was to determine whether the Postal Service's software license management program is functioning according to Postal Service standards and industry best practices.

What the OIG Found

The Postal Service is in the process of implementing an initiative to enhance its software license management program. Planning for this effort began in FY 2014. After delays, it is now estimated to be completed by March 2020. Meanwhile, the current program is not functioning in compliance with Postal Service policies and does not reflect industry best practices. For example, the Postal Service does not have a comprehensive enterprise-wide software license inventory that uses automated discovery and inventory tools and metrics.

We also judgmentally selected seven out of 263 active software contracts as of March 2017, where the supplier had multiple contracts and supported enterprise-wide software licenses. We found that the required provision and certain clauses were not always included.

This occurred because management has been focused on implementing cyber security-related enhancements across the organization. In addition, there have been significant



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personnel changes since the investment approval, which has delayed the establishment of a centralized software license management program.

According to management, this occurred because Supply Management's IT Software group has experienced challenges related to staffing levels and retaining an experienced contracting workforce. New personnel were not aware of the requirements for having IT-related provisions and clauses in software contracts.

Without a fully implemented centrally managed software license program, the Postal Service cannot readily track and analyze software license usage across the organization to ensure that it is not purchasing unnecessary software licenses and that its software license agreements are in compliance. This could result in purchasing of unneeded licenses, missed opportunities for volume pricing, or penalties for non-compliance with software license agreements. In FY 2015, the Postal Service

paid a \$26.8 million penalty to a supplier due to inappropriate software license usage for two applications.

Without the required provision and clauses, Postal Service operating systems could lack protection against compromise or degraded integrity of the operating system. In addition, data could be at risk for potential exposure. Finally, the Postal Service's liability amount could be higher in the event of a contractual dispute and there would be no remedy for unauthorized use of disclosed Postal Service data.

What the OIG Recommended

We recommended management complete implementation of the centrally managed software license program. Management should also modify current IT software contracts that do not include the required IT-related provision and clauses. In addition, management should implement a process to ensure that future IT software contracts include the required IT-related provision and clauses.

Transmittal Letter

MEMORANDUM FOR:	JEFFREY C. JOHNSON VICE PRESIDENT, INFORMATION TECHNOLOGY
	SUSAN M. BROWNELL VICE PRESIDENT, SUPPLY MANAGEMENT
	E-Signed by Kimberly Benoit ERIFY authenticity with eSign Deskto
FROM:	Kimberly F. Benoit Deputy Assistant Inspector General for Technology
SUBJECT:	Audit Report – Software License Management (Report Number IT-AR-17-008)
	esults of our audit of the U.S. Postal Service's Software oject Number 17TG003IT000).
	ration and courtesies provided by your staff. If you have Iditional information, please contact Jason Yovich, Director, or me at 703-248-2100.
Attachment	

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Findings

Software licenses are agreements between suppliers and customers about the guidelines for use and distribution of software. Effective software license management allows organizations to maintain accurate software inventories to improve accountability, security, and compliance.

Introduction

This report presents the results of our audit of the U.S. Postal Service's software license management (Project Number 17TG003IT000). Our objective was to determine whether the Postal Service's software license management program is functioning according to Postal Service standards and industry best practices. See Appendix A for additional information about this audit.

Software licenses are agreements between suppliers and customers about the guidelines for use and distribution of software. Effective software license management allows organizations to maintain accurate software inventories to improve accountability, security, and compliance.

In fiscal year (FY) 2016, the Postal Service's Information Technology (IT) group spent about \$174 million¹ on software licenses. Two Postal Service groups are responsible for acquiring and managing these licenses: IT Software and IT Acquisition. The IT Software group within Supply Management is responsible for acquiring software and providing contract support. The IT Acquisition Support (ITAS) group within IT is responsible for software license management.

The Postal Service uses supplier contracts to purchase software licenses. Each IT software contract requires a specific provision related to system integrity and IT-related clauses based on the type of contract. Contracting officers (CO) in the IT Software group are required to incorporate the provision and clauses in all software contracts.

The Postal Service has recognized the need to improve its ability to identify, document, configure, and manage software licenses throughout their lifecycle. In July 2015, the Postal Service approved a Decision Analysis Report (DAR)² for about \$35 million for a software asset management program, which includes software discovery, centralized inventory license management, and a new IT Asset Management group within IT with the responsibility for making strategic software-related decisions.

Summary

The Postal Service is in the process of implementing an initiative to enhance its software license management program. Planning for this effort began in FY 2014. After delays, it is now estimated to be completed in March 2020. While the Postal Service is in the process of implementing an initiative to enhance its software license management program, the current program is not in compliance with Postal Service policies and does not reflect industry best practices. For example, the Postal Service does not have a comprehensive enterprise-wide software license inventory that uses automated discovery and inventory tools and metrics.

Additionally, we reviewed seven of 263 active software contracts and found a required provision and clauses were not included.

This occurred because management has been focused on implementing cyber security-related enhancements across the organization. In addition, there have been significant personnel changes since the DAR approval, which have delayed the establishment of a centralized software license management program.

¹ Postal Service Supply Management functional group, FY 2016 total contract spending

² A DAR prepared by the sponsoring organization must support major operating expense investments to justify the expenditure.

According to management, this occurred because the IT Software group within Supply Management has experienced challenges related to staffing levels and retaining an experienced contracting workforce. New personnel were not aware of the requirements for IT-related provisions and clauses in software contracts.

Without a fully implemented centrally managed software license program, the Postal Service cannot readily track and analyze software license usage across the organization to ensure it does not purchase unnecessary software licenses and ensure compliance with software license agreements. This could result in missed opportunities for volume pricing, purchasing of unneeded licenses, or penalties for non-compliance with software license agreements. In FY 2015, the Postal Service paid a \$26.8 million penalty to a supplier due to inappropriate software license usage for two applications.

Without the required provision and clauses, Postal Service operating systems could lack protection against compromise or degraded integrity, data could be at risk for potential exposure, and its liability amount could be higher in the event of a contractual dispute.

Enterprise-Wide Software License Management

While the Postal Service is in the process of implementing an initiative to enhance its software license management program, the current program is not functioning according to its policies and industry best practices. We found the Postal Service does not follow its policies and has not addressed some industry best practices.³ For example, we found the Postal Service does not have a comprehensive enterprise-wide software license inventory and does not track and maintain comprehensive inventories using automated discovery and inventory tools according to its policies⁴ and best practices. See Table 1 for a summary of our best practices analysis.

We found the Postal Service does not have a comprehensive enterprise-wide software license inventory and does not track and maintain comprehensive inventories using automated discovery and inventory tools according to its policies and best practices.

Federal Software Licenses, Better Management Needed to Achieve Significant Savings Government-Wide, GAO-14-413, issued May 2014; Gartner, Inc.; Flexera Software; CDW; Microsoft Software Asset Management Optimization Model; Microsoft - The True-up Guide; Software Licensing Advisors; National Institute of Standards and Technology; TechRepublic; and Technology Concepts Group International.

⁴ Handbook AS-805, *Information Security*, dated November 2016, Section 10-4.3.1, General Acquisition Policy and Section 10-4.7.1, Corporate Software Inventory; and *ITEA Software Standards*, dated Quarter (Q) 3, FY 2012.

Table 1: Implementation of Software License Best Practices



⁵ License harvesting is a software asset management practice that involves identifying machines with licenses that are not currently being used or are being under-used.

Responsibilities for the Postal Service's current software license management inventory reside across various groups and there is no centralized automated software inventory system. For example, the Corporate Information Security Office and Engineering manage their own software licenses, while ITAS manages software licenses for IT.

ITAS maintains a database of software contracts for IT using a variety of methods to collect license information (i.e., discovery tools,⁶ scripts,⁷ and email inquiry⁸). Then, at least annually, ITAS reviews software license usage for IT to determine compliance against contracts. This process is manual and labor-intensive, which makes it susceptible to error and the results not always timely. For example, management stated that they required three weeks or more to determine the license usage for larger volume contracts.

Handbook AS-805⁹ requires the Postal Service to have an enterprise-wide software inventory. Additionally, best practices state that organizations should include the ten elements in Table 1 to guide in the development of a software license program.

This occurred because management has been focused on implementing cyber security-related enhancements across the organization. In addition, there have been significant personnel changes, which delayed establishment of a centralized software license management program.

Without a fully implemented centrally managed software license program, the Postal Service cannot readily track and analyze software license usage across the organization to ensure that unnecessary software license are not purchased or ensure compliance with software license agreements. This could result in missed opportunities for volume pricing, purchasing of unneeded licenses, or penalties for non-compliance with software license agreements. In FY 2015, the Postal Service paid a \$26.8 million penalty due to inappropriate software license usage for two applications.

The Postal Service has recognized the need to improve its ability to identify, document, configure, and manage software licenses throughout their lifecycle. In FY 2015, the Postal Service approved a DAR for about \$35 million for the software asset management program,¹⁰ which includes software discovery, centralized inventory license management, and a new IT Asset Management group within IT with the responsibility for strategic software-related decisions. During our audit, management stated they would implement the enterprise-wide software license program by March 2020 and it should address industry best practices.

Software Contract Management

Based on our review of seven Postal Service software contracts, we found one missing system integrity provision and missing clauses for indefinite quantity and information security. The COs in the IT Software group did not include contract Provision 4-6, *System Integrity*,¹¹ in two contracts, and did not add Clause 4-19, *Information Security Requirements Resource*,¹² in three of the contracts. In addition, Clause 2-42, *Indefinite Quantity*¹³ was not included in one of the contracts. See Table 2 for the results of our contract review of seven software contracts.¹⁴

Based on our review of seven Postal Service software contracts, we found one missing system integrity provision and missing clauses for indefinite quantity and information security.

⁶ Tools such as IBM License Metric Tool, Microsoft System Center Configuration Manager and BMC Discovery.

⁷ For example, Oracle databases and UNIX servers.

⁸ Symantec Suite Bundle - email is used to query administrators on software license usage.

⁹ Handbook AS-805, Section 10-4.3.1, General Acquisition Policy, and Section 10-4.7.1, Corporate Software Inventory.

¹⁰ The Chief Information Security Office (CISO) and IT are coordinating to implement the ServiceNow Configuration Management Database, which will include the IT Software Asset Management program, allowing IT to actively manage all software on the network so that only authorized software is installed.

¹¹ This provision applies to contracts for third-party software installed on all Postal Service computer systems.

¹² This clause applies to contracts containing personally identifiable information

¹³ Clause 2-42 applies to contracts where the quantities of supplies or services specified in the schedule are not purchased until ordered.

¹⁴ One IBM contract (1BITSW-09-B-0023) was not an active contract but showed as active in the Contract Authoring Management application. The software purchased through this contract was subsequently absorbed into IBM contract 1BITSW-14-B-0008.

Table 2: Review of IT Software Contract Requirements

	Software Supplier	Contract Number	Award Date	Missing Provision	Missing Clause
1	Insight Public Sector Inc.	1BITSW-13-B-0016	August 29, 2013	Provision 4-6: System Integrity	None
2	Insight Public Sector Inc.	1BITSW-16-B-0003	January 4, 2016	Provision 4-6: System Integrity	Clause 2-42: Indefinite Quantity
3	Oracle America, Inc.	1BITSW-08-B-0046	August 11, 2008	None	Clause 4-19: Information Security Requirements Resource
4	Oracle America, Inc.	1BITSW-11-B-0006	May 31, 2011	None	Clause 4-19: Information Security Requirements Resource
5	IBM	1BITSW-06-B-0027	June 5, 2006	None	Clause 4-19: Information Security Requirements Resource
6	IBM	1BITSW-14-B-0008	January 1, 2014	None	None
7	IBM	1BITSW-14-B-0018	August 1, 2014	None	None

Source: OIG review of IT software contracts.

According to Supplying Principles & Practices (SP&P),¹⁵ Provision 4-6 must be included in contracts for third-party software installed on all computer systems in the possession of the Postal Service, with the exception of personal computers. In addition, the SP&Ps state that Clause 4-19 must be included in all contracts for IT and other information processing and information gathering services when personally identifiable information or other sensitive information will be generated or collected during contract performance. In addition, all indefinite-quantity contracts must include Clause 2-42.

According to management, this occurred because the IT Software group within Supply Management has experienced challenges related to staffing and retaining an experienced contracting workforce. New personnel were not aware of the requirements for IT-related provisions and clauses in software contracts.

Without Provision 4-6, the Postal Service could lack protection against compromise or degraded integrity of the operating system. In addition, without Clause 4-19, Postal Service data could be at risk for potential exposure. Finally, without Clause 2-42, the Postal Service's liability amount could be higher in the event of a contractual dispute. The software portions of these contracts totaled about \$22 million.¹⁶

¹⁵ SP&P, Section 8-4.9, Solicitation Provisions.

¹⁶ We calculated monetary impact of \$22,491,323 based on the total committed contract amounts between September 1, 2016 and March 1, 2017 for the contracts reviewed.

Recommendations

We recommend the Vice President, Information Technology:

1. Complete implementation of the centrally managed software license program that complies with Postal Service policy and best practices.

We recommend the Vice President, Supply Management:

- We recommend management complete implementation of the centrally managed software license program that complies with Postal Service policy and best practices; and review current IT software contracts and modify those that do not include the required IT-related provision and clauses.
- 2. Review current Information Technology (IT) software contracts and modify those that do not include the required IT-related provision and clauses.
- 3. Implement a process to ensure that future Information Technology (IT) software contracts include the required IT-related provision and clauses.

Management's Comments

Management generally agreed with the findings and the intent of our recommendations. Management disagreed with the monetary impact related to missing contract clauses. See Appendix B for management's comments in their entirety.

Regarding recommendation 1, management agreed to complete automation of their IT software asset management system. Management stated they maintain an enterprise-wide inventory of IT software contracts and follow an annual documentation review process. In addition, they stated they do comply with their policies and believe the OIG has not provided sufficient evidence to support their non-compliance. The target implementation date is March 2020.

Regarding recommendation 2, management stated the three contracts (1BITSW-06-B-0027, 1BITSW-08-B-0046, and 1BITSW-11-B-0006) did not need Clause 4-19 because they were established prior to the clause issue date. Management also stated that contract 1BITSW-16-B-0003 contained Provision 4-6 and Clause 2-42 and they will provide supporting evidence separately from their response. Management agreed to review active IT software contracts to determine if Clause 4-19 is included where appropriate. In subsequent communications, management stated they would complete this review by January 2018.

Regarding recommendation 3, management agreed with the recommendation and plans to add a solicitation/contract template to the CAMS. Purchasing staff will receive instruction to use this template. The target implementation date is January 2018.

Evaluation of Management's Comments

The OIG considers management's comments generally responsive to the recommendations and corrective actions should resolve the issues identified.

Regarding the monetary impact, the missing clauses should have been added to the contracts retroactively because Postal Service policy does not provide an exemption. Furthermore, these clauses were added to policy to protect the Postal Service from additional financial liability, data exposure, or compromise.

Regarding recommendation 1, Postal Service policy states that an enterprise-wide software inventory must be maintained. The Postal Service's current software license inventory process consists of several groups manually generating separate inventories only when requested. The Postal Service does not have a comprehensive enterprise-wide software license inventory that uses

automated discovery and inventory tools and metrics. During audit fieldwork management could not provide the OIG with a comprehensive enterprise wide software license inventory listing. As such, management's current process does not meet the intent of Postal Service policy.

Regarding recommendation 2, the OIG did not receive any evidence prior to receiving management's comments. We will evaluate documentation received and determine if it is sufficient corrective action.

All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. These recommendations should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed.

Appendices

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Appendix A: Additional Information

Two groups are responsible for acquiring and managing these licenses: ITAS. The IT Software group within Supply Management is responsible for acquiring software and providing contract support. The ITAS group within IT is responsible for software license management.

Background

Software licenses are agreements between suppliers and customers about the guidelines for use and distribution of software. Effective software license management allows organizations to maintain accurate software inventories to improve accountability, security, and compliance.

In FY 2016, the Postal Service's IT group spent about \$174 million on software. Two groups are responsible for acquiring and managing these licenses: IT Software and ITAS. The IT Software group within Supply Management is responsible for acquiring software and providing contract support. The ITAS group within IT is responsible for software license management. COs are required to incorporate specific clauses in all software and indefinite delivery quantity contracts.

The Postal Service uses supplier contracts to purchase software licenses. Each IT software contract requires a specific provision and IT-related clauses based on the type of contract. COs in the IT Software group are required to incorporate the provision and clauses in all software contracts.

Objective, Scope, and Methodology

Our objective was to determine whether the Postal Service's software license management program is functioning according to Postal Service standards and industry best practices.

To accomplish our objective, we:

- Reviewed policies, procedures, and practices for software license management.
- Reviewed software license best practices from private industry and government sources.
- Interviewed IT and Supply Management managers regarding software acquisition procedures and practices, roles and responsibilities, and coordination between functional groups.
- Interviewed IT managers to identify software license management tools they use.

To determine our sample, we queried the Electronic Data Warehouse (EDW) for active software-related contract records. We judgmentally selected a sample from 263 contracts where the software supplier had multiple contracts, the supplier was a well-known brand name, and supported enterprise-wide software and licenses. We selected seven software contracts for three software suppliers: Insight Public Sector, Inc., Oracle America, Inc., and IBM. Our analysis included the master contracts, modifications, delivery orders, and terms and conditions. In addition, we analyzed same-supplier contracts to determine if opportunities existed to consolidate the contracts. Finally, we analyzed the contracts to determine if any of the licenses were no longer in use.

We conducted this performance audit from March through September 2017, in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. 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. We discussed our observations and conclusions with management on August 28, 2017, and included their comments where appropriate.

We assessed the reliability of the contract data downloaded from the EDW by interviewing Postal Service officials knowledgeable about the data, reviewing related contract documentation, and analyzing the data. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact
Software Inventory Management – Greater Boston	Evaluate the effectiveness of the Postal Service's software inven- tory management practices in the Greater Boston District.	IT-AR-15-007	7/13/2015	None

Appendix B: Management's Comments



September 14, 2017

LORI LAU DILLARD DIRECTOR, AUDIT OPERATIONS

SUBJECT: Software License Management Report Number IT-AR-17-DRAFT

Thank you for the opportunity to review and provide comments on the Office of Inspector General subject draft audit report "Software License Management". Management agrees in part with Recommendation 1.

Recommendation 1:

We recommend the Vice President, Information Technology:

Complete implementation of the centrally managed software license program that complies with Postal Service policy and best practices.

Management Response/Action Plan:

Management agrees to complete the automation of our manual inventory process to enhance our software asset management system and policies. However, management does not agree that the OIG has provided sufficient findings that the Postal Service is not complying with its policies, specifically Sections 10-4.3.1 – General Acquisition Policy and 10-4.7.1 – Corporate Software Inventory of Handbook AS-805 – Information Security dated 2016. The Postal Service maintains enterprise software inventory documentation on all IT software contracts and adheres to a yearly process review to ensure accountability and appropriate documentation is maintained.

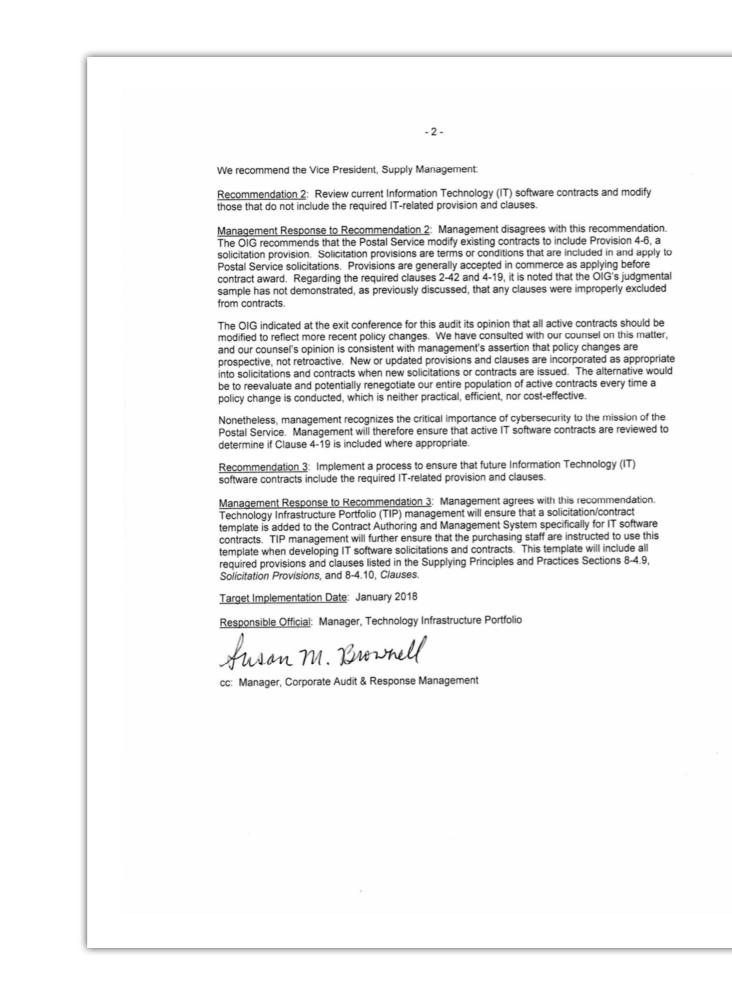
Target Implementation Date: March 2020

Responsible Official: Manager, IT Acquisition Support

Jeffrey C. Johnson Vice President, Information Technology

cc: Susan M. Brownell Vice President, Supply Management Manager, Corporate Audit Response Management

	Susan M. Brownell
	SUSAN M. DHOWNELL Vice President, Supply Management
-	UNITED STATES
	POSTAL SERVICE
	September 14, 2017
	LORI LAU DILLARD
	SUBJECT: Software License Management (Report Number IT-AR-17-DRAFT)
	Thank you for providing the United States Postal Service with an opportunity to review and comment
	on the subject draft audit report "Software License Management." On behalf of Supply Management, management agrees with the report's findings except where noted below. Management also agrees
	with Recommendation 3. Management does not agree with Recommendation 2 or the monetary
	impact. It is noted that Information Technology has responded separately to this draft audit report concerning Recommendation 1 and additional areas.
	Management does not agree with the finding that contracts 1BITSW-06-B-0027, 1BITSW-08-B-0046,
	and 1BITSW-11-B-0006 improperly lacked Clause 4-19 – Information Security Requirements Resource (February 2013). These contracts were established prior to the issue date of that clause.
	Management does not agree with the finding that contract 1BITSW-16-B-0003 lacked Provision 4-6 -
	System Integrity (March 2006) or Clause 2-42 – Indefinite Quantity (March 2006). The terms and conditions agreed to by the supplier and included in the executed basic contract included Provision 4-6
	and Clause 2-42. The Postal Service will submit evidence supporting this claim to the Office of Inspector General (OIG) for evaluation separately from this management response.
	Management does not agree with the OIG's analysis that lacking Provision 4-6 – System Integrity
	(March 2006) would preclude a contractual remedy from the supplier for any unauthorized use, modification, or disclosure of information. Provision 4-6 relates to protections for the Postal Service
	against compromised or degraded operating system integrity, not use, modification, or disclosure of information. The Postal Service has other standard clause language and controls in place to address
	unauthorized use, modification, or disclosure of information, and lacking Provision 4-6 would not preclude the Postal Service from leveraging those remedies.
	Management does not agree with the monetary impact since the provisions and clauses identified by
	the OIG were either properly incorporated or properly excluded from four of the five contracts. The remaining contract's monetary impact appears to be based on the incorrect presumption that the
	Postal Service would have no contractual remedy from the supplier for any unauthorized use, modification, or disclosure of information. We therefore disagree that any funds are actually at risk.
	Management's response to the recommendations included in the draft report directed to Supply Management may be found on the following page.
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