Audit Report

Review of Availability of Tier 1 Business Critical Services

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Highlights

Objective

Our objective was to determine if the U.S. Postal Service is accurately measuring service availability for its Tier 1 business critical services.

The Postal Service monitors service availability for Tier 1 business critical services. These services support core business functions, such as moving the mail, delivery, revenue, and customer service. For example, Click-N-Ship and PostalOne! are Tier 1 business critical services. Outages related to Tier 1 business critical services may potentially cause a loss of current or future revenue and brand value or diminished customer experience.

The availability management process ensures that systems and services meet evolving business needs. In January 2018, management updated the Service Availability Policy, which defines service availability as the ability of an Information Technology service to perform its agreed upon function when required. The policy also states that availability should be calculated by subtracting planned or unplanned outages that occur during defined business hours.

What the OIG Found

We found that management is not accurately measuring availability for Tier 1 business critical services. For instance, management does not include planned and unplanned outages when calculating availability and they do not accurately capture unplanned outages related to the availability of Tier 1 services.

We also found the Postal Service established policy that defines service availability, the owners and processes related to service availability, and business criticality levels. However, it did not formally establish and document availability targets and acceptable hours for planned and unplanned downtime for Tier 1 business critical services in policy or service level agreements.

These issues occurred because management did not enforce compliance with policy that instructs personnel how to calculate availability. Further, there were no documented procedures for instructing personnel when to create a critical incident and no formal official availability target and management was not familiar with the best practice that recommends establishing and documenting acceptable hours of planned and unplanned downtime. However, during our audit, management took corrective action to update the documented procedures that included instructions for personnel to create a critical incident.

Without formal availability targets, the Postal Service cannot ensure that all Information Technology services are meeting customer availability needs in a cost-effective and timely manner, which could affect the Postal Service brand. Further, incorrect availability metrics could result in senior leaders relying on inaccurate information when making decisions.

What the OIG Recommended

We recommended management improve measurement of system availability by establishing and documenting availability targets and acceptable hours for planned and unplanned downtime for each application or service considered to be a Tier 1 business critical service and calculating availability in the appropriate management tools according to Postal Service policy.

"The Postal Service monitors service availability for Tier 1 business critical services. These services support core business functions, such as moving the mail, delivery, revenue, and customer service."

Transmittal Letter

September 11, 2018

MEMORANDUM FOR: JEFFREY C. JOHNSON
VICE PRESIDENT, INFORMATION TECHNOLOGY

E-Signed by Kimberly Benoit
VERIFY authenticity with eSign Desktop

FROM: Kimberly F. Benoit
Deputy Assistant Inspector General
  for Technology

SUBJECT: Audit Report – Review of Availability of Tier 1 Business Critical Services (Report Number IT-AR-18-004)

This report presents the results of our audit of the Review of Availability of Tier 1 Business Critical Services (Project Number 18TG007IT000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Jason Yovich, Director, Information Technology, or me at 703-248-2100.

Attachment

cc: Postmaster General
Corporate Audit Response Management

Results

Introduction/Objective

This report presents the results of our self-initiated audit of the review of the availability of Tier 1 Business Critical Services (Project Number 18TG007IT000). Our objective was to determine if the U.S. Postal Service is accurately measuring service availability for Tier 1 business critical services.[1]

Background

The availability management process ensures that systems and services meet evolving business needs. The availability and reliability of Information Technology (IT) services are paramount in a competitive market, because they directly influence customer satisfaction, loyalty, and the business reputation. In January 2018, management updated the Service Availability Policy,[2] which identifies four business service levels[3] and defines service availability as "the ability of an IT service to perform its agreed function when required". The policy also states that availability should be calculated by subtracting planned or unplanned outages that occur during defined business hours.

The Postal Service monitors service availability for Tier 1 services that support their core business functions, which include moving the mail/plant management, delivery/major mailers, revenue, and customer experience. For example, Click-N-Ship and PostalOne! are Tier 1 services. Both planned and unplanned outages[4] related to Tier 1 services may cause a potential loss of current or future revenue and brand value or diminished customer experience.

The Postal Service uses automated tools[5] to monitor and track incidents[6] related to Tier 1 services. This data populates information on the Chief Information Officer (CIO) Dashboard, which provides real-time information about incidents, outages, and availability to Postal Service leadership. It enables Postal Service leadership to readily make well-informed decisions.

The availability and reliability of IT services are paramount in a competitive market they directly influence

Customer Satisfaction	Loyalty	Business Reputation

In January 2018, management updated the **Service Availability Policy,** which defines service availability as:

"the ability of an IT service to perform its agreed function when required."

The policy also states that availability should be calculated by subtracting planned or unplanned outages that occur during defined business hours.

Both planned and unplanned outages related to Tier 1 services may cause a potential loss of current or future revenue and brand value or diminished customer experience.

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1   For the purposes of this report we will refer to Tier 1 business critical services as Tier 1 services.
2   Management Instruction (MI) AS-800-2018-2, *Service Availability Policy*, dated January 1, 2018.
3   The business service levels include Tier 1 - Business Critical, Tier 2 - High-Level Support, Tier 3 - Production, and Tier 4 - Low-Level Support.
4   An interruption that results in the service being unavailable for use during the service's agreed service time.
5   SolarWinds and Webmetrics are used to monitor services and ServiceNow is used to track incidents.
6   An unplanned interruption or reduction in the quality of an IT service.

Finding #1: Service Availability Calculation

Management does not include planned and unplanned outages when calculating availability. As illustrated in Table 1, Postal Service policy[7] states that availability should be calculated by subtracting planned or unplanned outages that occur during defined business hours. However, the Postal Service actually calculates availability by subtracting the total duration of critical incidents.[8]

Table 1: Service Availability Calculations

Postal Service Policy	Postal Service Actual Practice
$$\text{Availability (\%)} = \frac{\text{Agreed Service Time (AST)}^9 - \text{Duration of Outages}}{\text{AST}} \times 100$$	$$\text{Availability (\%)} = \frac{\text{Time Period}^{10} - \text{Duration of Critical Incident}}{\text{Time Period}} \times 100$$

Further, the Postal Service does not capture unplanned outages related to availability for Tier 1 services accurately. For example, on May 24, 2018, a critical incident occurred relating to Telecommunications Services[11] that also impacted 96 applications. The Postal Service began to track this critical incident for the Telecommunications Service, which was in critical status for 12 hours and 41 minutes.[12] However, they did not create corresponding critical incidents for the additional Tier 1 services[13] that experienced an outage, which means their availability was not reflected accurately on the CIO Dashboard.

Postal Service guidance[14] states that a critical incident for a service must meet these criteria:

- Service is down or unusable with no workaround;

- Impact is either nationwide, or affecting more than one facility, district or area; and

- Service will disrupt moving the mail, conducting business with major mailers, collecting or generating revenue, or business operations.

This occurred because management did not enforce compliance with policy that instructs personnel how to calculate availability. In addition, there were no documented procedures to instruct personnel when to create a critical incident. We found IT personnel follow standard operating procedures[15] that only instruct them to submit high incidents. However, the availability calculation is based on critical tickets. Submitting high tickets instead of critical tickets results in inaccurate information about system availability. In addition, when critical services are unavailable (e.g., PostalOne!, USPS Customer Tools, or eCustomer Care), the Postal Service cannot meet its business needs or identify revenue losses and diminished customer experience and decreased brand value could occur. The estimated impact related to the duration of the Telecommunication Service outage on May 24, 2018, was $6,735,611.[16]

During our audit, management took corrective action to update the standard operating procedures that included instructions for personnel to create critical incident tickets. Therefore, we are not making a recommendation regarding this issue.

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7   MI AS-800-2018-2.
8   The total time the incident is in critical priority status for a given period.
9   AST is the published business hours in the Enterprise Information Repository.
10 The Postal Service calculates availability for 30-day, 90-day, and 12-month periods.
11 Telecommunications Services is a service listed on the CIO Dashboard.
12 ServiceNow Incident INC000003300610 was in a critical status from May 24, 2018, at 11:26:21 A.M. through May 25, 2018, at 12:08:05 A.M.
13 For example, PostalOne!, USPS Customer Tools, and eCustomer Care.
14 Knowledge Base article KB0044876, ServiceNow – Critical Incident Process Change, published September 20, 2016.
15 Enterprise Systems Monitoring, Incident Management Team, Webmetrics, and SolarWinds Alert Action.
16 This amount is the average cost of an unplanned outage based on *Cost of Data Center Outages*, Ponemon Institute, January 2016, which is considered an industry best practice.

> **Recommendation #1**
>
> The **Vice President, Information Technolog**y, should calculate availability in the appropriate management tools, according to Postal Service policy.

> **Recommendation #2**
>
> The **Vice President, Information Technology**, should establish and document availability targets and acceptable hours for planned and unplanned downtime for each application or service considered to be a Tier 1 business critical service.

Finding #2: Service Availability Targets

The Postal Service established policy[17] that defines service availability and other related terms,[18] the owners and processes related to service availability, and business criticality levels. However, it did not formally establish and document availability targets and acceptable hours for planned and unplanned downtime[19] for Tier 1 services in policy or service level agreements (SLA).[20] According to the Information Technology Infrastructure Library (ITIL),[21] availability requirements must be defined, understood, and documented in SLAs. For example, Gartner states acceptable hours of downtime to be up to 43.8 hours of unplanned and fewer than 200 hours of planned for a year.[22]

This issue occurred because management stated unofficial availability targets of 99.9 percent, 99.99 percent, and 99.999 percent, but never formalized an official target. In addition, management stated they were not aware that they should document acceptable hours of planned and unplanned downtime. Without formal availability targets, the Postal Service cannot ensure that all IT services are meeting customer availability needs in a cost-effective and timely manner, which could affect the Postal Service brand.

"The Postal Service did not formally establish and document availability targets and acceptable hours for planned and unplanned downtime for Tier 1 services in policy or SLAs."

In addition, the ability of management to determine when availability goals are not met is hindered. As a result, they cannot identify systemic issues, which could also impact brand value.

Management's Comments

Management agreed with the findings and recommendations and disagreed with the $6.7 million potential revenue at risk. See Appendix B for management's comments in their entirety.

Regarding recommendation 1, management will correct the availability calculation to align with MI AS-800-2018-2, Service Availability. The target implementation date is October 31, 2018.

Regarding recommendation 2, management will develop, document, and implement a process to determine availability targets, and include them in the appropriate tools. The target implementation date is September 30, 2019.

Evaluation of Management's Comments

The U.S. Postal Service Office of Inspector General (OIG) considers management's comments responsive to recommendations 1 and 2 in the report.

Regarding the other impact amount of $6.7 million, management stated there was no revenue loss; however, the OIG assessed the amount as revenue the Postal Service was at risk of losing.

All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. 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.

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17 MI AS-800-2018-2.
18 For example, outage, uptime, and downtime.
19 The time an IT service or other configuration item is not available during its agreed upon service time.
20 A contract between a service provider and its customers that documents what services will be provided and defines the service standards the provider is obligated to meet.
21 ITIL Service Design, Best Management Practice, 2011 edition.
22 Increase Availability Through Best-In-Class Benchmarking and by Targeting Causes of Downtime, dated September 26, 2014.

Appendices

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

Appendix A: Additional Information

Scope and Methodology

The scope of this audit included availability for Tier 1 services. We initially selected Click-N-Ship to determine if a process existed to ensure that Tier 1 services met availability goals. We could not determine whether Click-N-Ship met the availability goal, because the monitoring data required for our analysis was not available past 30 days and no official availability goal was established.

To accomplish our objective, we:

- Reviewed policies and procedures related to service availability and incident management to gain an understanding of how the Postal Service manages, measures, and reports the availability of services that support daily operations.

- Interviewed Postal Service personnel to gain an understanding of the process for monitoring and reporting service availability that includes roles and responsibilities, establishment of goals and requirements, and identification of Tier 1 services.

- Obtained a list of services on the CIO Dashboard and selected a Tier 1 service (i.e., Click-N-Ship) for review to identify availability requirements.

- Identified systems that provide data to determine availability, logging activities, monitoring data collected, frequency of collection/reporting capabilities, and manual processes.

- Determined how the Postal Service calculates service availability for Tier 1 services captured on the CIO Dashboard.

We conducted this performance audit from February through September 2018, 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 13, 2018, and included their comments where appropriate.

We did not assess the reliability of any computer-generated data for the purposes of this report.

Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact (in millions)
PostalOne! -Business Customer Support System Availability	Determine the effectiveness of support for PostalOne!-BCSS operational availability.	IT-AR-16-010	8/10/2016	$7.7

Appendix B: Management's Comments

JEFFREY C. JOHNSON
VICE PRESIDENT
INFORMATION TECHNOLOGY

UNITED STATES POSTAL SERVICE

September 5, 2018

MONIQUE COLTER
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Review of Availability of Tier 1 Business Critical Services (Report Number [IT-AR-18-DRAFT])

Management has reviewed the preliminary report regarding the audit of the availability of Tier 1 Business Critical Services. Management does agree with the findings. The Management doesn't agree with other impact identified by OIG as there was no revenue loss. USPS collected all revenue in next two business days and a 4% increase over SPLY.

Recommendation 1:
The Vice President, Information Technology, should calculate availability in the appropriate management tools, according to the Management Instruction, AS-800-2018-2, Service Availability.

Management Response/Action Plan:
Management agrees with recommendation #1. The calculation will be corrected to be aligned with the Management Instruction, AS-800-2018-2, Service Availability.

Target Implementation Date: October 31, 2018

Responsible Official: Vice President, Information Technology

Recommendation #2:
The Vice President, Information Technology, should establish and document availability targets and acceptable hours for planned and unplanned downtime for Tier 1 business critical services. The process will be implemented and availability targets will be determined, documented and included in the appropriate tools.

Management Response/Action Plan:
Management agrees with recommendation #2. A process will be developed, documented and implemented to determine availability targets for Tier 1 services

Target Implementation Date: September 30, 2019

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JEFFREY C. JOHNSON
VICE PRESIDENT
INFORMATION TECHNOLOGY

UNITED STATES
POSTAL SERVICE

Responsible Official: Vice President, Information Technology

Jeffrey C. Johnson
Vice President, Information Technology

cc: Manager, Corporate Audit & Response Management

OFFICE OF INSPECTOR GENERAL

UNITED STATES POSTAL SERVICE

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