PERFORMANCE REVIEW

DEPARTMENT OF ADMINISTRATION OFFICE OF TECHNOLOGY

AUDIT OVERVIEW

The Legislative Auditor's Survey of State Employees Finds That the Office of Technology Has Improved or Maintained Service Levels Since the Consolidation of State Technology Services

The Legislative Auditor's Random Check of 15 Retired Hard Drives Found That Appropriate Wiping Procedures Were Performed. However, the Office of Technology Should Also Be Performing Random Checks of Retired Computer Hard Drives

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CONTENTS

EXECUTIVE SUMMARY

Issue 1: The Legislative Auditor's Survey of State Employees Finds that the Office of Technology Has Improved or Maintained Service Levels Since the Consolidation of State Technology Services

The Legislative Auditor conducted a survey of 500 state employees who worked for state agencies that have had technology services consolidated into the Office of Technology.   The goal of the survey was to get an assessment of the level of services that state employees (technology users) are receiving following the consolidation.   Services were evaluated in the following areas:

- level of communication by OT,

- quality of equipment and software,

- level of service and support,

- satisfaction with the Hewlett Packard computers on the current statewide contract, and

- overall opinion of services received from the consolidated OT.

Through the surveying period, September 10 – October 26, 2009, a total of 212 survey recipients filled out the survey, for a response rate of 42.4 percent. The majority of respondents to the survey were aware that their agency had been consolidated into the Office of Technology and stated that technology services had either improved or at least stayed the same following the consolidation. One question of the survey that illustrates this point question eight; it asked for the overall opinion of the services provided since consolidation. The combination of "improved" (40.6%) and "no noticeable change" (28.8%) represent nearly 70 percent of all responses to this question. The chart below shows this relationship.
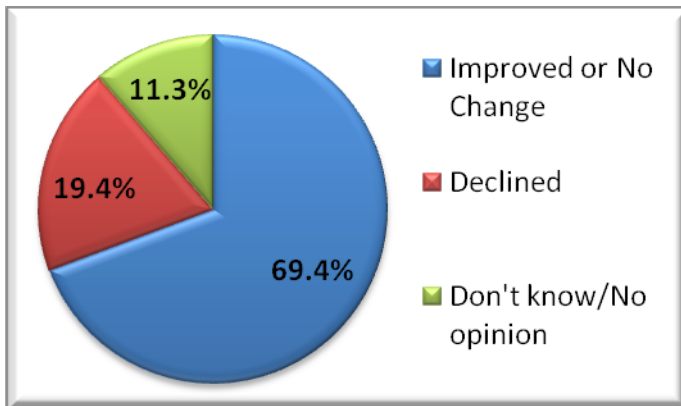
The Legislative Auditor recognizes the challenges of consolidating many individual information technology sections into a single entity. For this reason, the maintenance of service levels was recognized as a positive response. **The Secretary of the Department of Administration, the Chief Technology Officer, and the Office of Technology should be commended for their apparent success during this transition period.**

Issue 2: The Legislative Auditor's Random Check of 15 Retired Hard Drives Found That Appropriate Wiping Procedures Were Performed. However, the Office of Technology Should Also Be Performing Random Audit Checks of Retired Computer Hard Drives.

The "End of Life Disk Drive Handling Procedure" (EOL procedure) issued in September 2006 has since been revised and was reissued in April 2009. The procedure requires the Department of Defense (DoD) wipe for hard drives that are being retired from state agencies and transferred to Surplus Property. In order to certify that retired hard drives are properly DoD wiped, OT has assigned a full-time staff person to work on-site at Surplus Property to perform end-of-life disk wiping. **According to the OT, the full-time staff person at Surplus Property performed a DoD wipe on 2,682 computers from June 2007 to February 2009.**

To ensure that sensitive information is not compromised and that computer hard drives are properly DoD wiped, the OT procedure requires random checks by OT audit staff of computers at Surplus Property. **The frequency of random checks was never established in the procedure and OT audit staff did not conduct a random check of surplus computers until September 2008.** This has been the only audit conducted by OT since the procedure was created. Additionally, the audit report stating the findings for the September 2008 audit has not been finalized, and to date remains incomplete.

On March 2, 2009, the Legislative Auditor conducted an audit of 15 computer hard drives which were positioned in various locations in the Surplus Property warehouse in Dunbar, WV. All of the computers selected had the Windows XP operating system reinstalled on their hard drives. First, the Legislative Auditor started each computer to ensure the operating system had been reinstalled and the computer was functional. Second, the Legislative Auditor examined the hard drive by searching for certain file types, such as word processing documents and spreadsheet files. Finally, the Legislative Auditor manually examined all files and folders on the hard drive, looking for any residual information which was not found in the original search. Upon the manual review, it was found that 2 of the 15 computers selected by the Legislative Auditor's staff had residual information remaining on the hard drives.

As a result of finding these two computers with residual files, the Legislative Auditor conducted a forensic analysis of the hard drives using EnCase® computer forensic software. **The forensic analysis enabled the Legislative Auditor to make the determination that the computers were appropriately DoD wiped, and the hard drives were modified after the computers were wiped.** Similar to the intention of the EOL audit procedure, the Legislative Auditor's review of retired computer hard drives at Surplus Property proved beneficial because it gives some assurance that computer hard drives are being wiped before being sold to the public.

Recommendations

1. *The Legislative Auditor recommends that the Office of Technology follow its own procedure to conduct random checks of retired computer hard drives.*

2. *The Legislative Auditor recommends that the Office of Technology revise its "End of Life Disk Drive Handling Procedure" or create an audit program that establishes: a minimum number of annual random audits of retired computers; a minimum number of computer hard drives to be reviewed in an audit; and determine whether the sampling should be random or stratified.*

OBJECTIVE, SCOPE & METHODOLOGY

Objective

The purpose of this review was to assess the level of services provided by the Office of Technology (OT) following the consolidation of technology services and examine the OT's "End of Life Disk Drive Handling Procedure" for retired computer hard drives, first issued in September 2006.

Scope

The scope of the state employee survey regarding services provided by the OT encompasses the time since the responding individual's agency was consolidated. The "End of Life Disk Drive Handling Procedure" was evaluated from its inception in 2006 to present. The on-site inspection of hard drives at Surplus Properties took place on March 2, 2009.

Methodology

The Legislative Auditor assessed post-consolidation service levels by administering a survey that was sent to state employees, with the exception of those working for the OT. The Office of Technology provided a list of 12,178 email addresses of state employees. From this list, 273 OT employees were removed for a final adjusted population of 11,905. Five hundred individuals were selected at random from the adjusted population to participate in the survey. Contact was made with the selected employees via email and a link was provided to the web-based survey application which compiled the data. All data analysis was conducted by the Legislative Auditor's Office. The "End of Life Disk Drive Handling Procedure" was evaluated from both procedural and practical perspective. The actual procedure was examined from the inception of the first version drafted in 2006 to the revision in April 2009. The practice of wiping hard drives was assessed through an on-site inspection of Surplus Properties on March 2, 2009. During the visit, the Legislative Auditor inspected 15 computers at random in an attempt to determine whether the hard drives had been appropriately wiped of residual information remaining from the previous user. Every aspect

of this report followed the Generally Accepted Governmental Auditing Standards as set forth by the Comptroller General of the United States of America (GAGAS).

ISSUE 1

The Legislative Auditor's Survey of State Employees Finds That the Office of Technology Has Improved or Maintained Service Levels Since the Consolidation of State Technology Services.

Issue Summary

The Legislative Auditor conducted a survey of 500 state employees who worked for state agencies that have had technology services consolidated into the Office of Technology.   The goal of the survey was to get an assessment of the level of services that state employees (technology users) are receiving following the consolidation. The majority of the 212 state employees who responded to the survey were aware that their agency had been consolidated into the Office of Technology.   Additionally, a sizeable majority of respondents stated that technology services had either improved or at least stayed the same following the consolidation. Notably, 41 percent of respondents stated that technology services have improved since the consolidation.

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Background

The Office of Technology (OT) began the effort to consolidate state agency information technology services in fiscal year 2006. The consolidation intends to reduce technology costs, standardize technology equipment and procedures for the executive branch, centralize information technology (IT) support staff, and generally improve the technology and technological services available to the executive branch. Currently, most of the agencies to be consolidated into the OT have been fully organizationally consolidated with the exception of the Department of Revenue, West Virginia Network and other small boards and commissions. It must be noted that state constitutional offices, the Judicial branch, the Legislative branch, the Department of Education, and the Board of Education are exempt from the consolidation.

Survey Methodology

On September 10, 2009, the Legislative Auditor initiated a survey of Executive Branch employees from consolidated agencies regarding

their satisfaction with services received from the Office of Technology. Questions were asked covering the following subjects:

- level of communication by OT,

- quality of equipment and software,

- level of service and support,

- satisfaction with the Hewlett Packard computers on the current statewide contract, and

- overall opinion of services received from the consolidated OT.

It is the opinion of the Legislative Auditor that respondents answering that services have "stayed the same" especially through a consolidation period is a positive response.

For most of the questions relating to the above subjects, the possible responses were simple. The services had

1) Improved

2) Declined

3) Stayed the same

4) Do not know or no opinion.

It is the opinion of the Legislative Auditor that respondents answering that services have "stayed the same" especially through a consolidation period is a positive response. For this reason, the reporting of statistics will include "improved" and "stayed the same" responses combined as such.

Through the surveying period, September 10 – October 26, 2009, a total of 212 survey recipients filled out the survey, for a response rate of 42.4.

In order to conduct the survey, the Legislative Auditor obtained from the OT, all email addresses of employees from consolidated agencies. This list consisted of 12,178 email addresses. For the survey, employees of the Office of Technology employees were removed, which brought the adjusted population to 11,905. Of this population, 500 individuals were randomly selected to be sent a survey. In order to achieve a statistical confidence level of 95 percent, 373 responses would have to be received. Through the surveying period, September 10 – October 26, 2009, a total of 212 survey recipients filled out the survey, for a response rate of 42.4 percent and a confidence level of 85.75 percent. Since 373 responses were not received, these survey results have a lower confidence level in terms of an accurate measure of the level of satisfaction. Results do, however, provide a valuable look at the progress and satisfaction of the OT consolidation.

Survey Results

Question 1:

The first question of the survey simply asked the respondent to identify the agency in which they work. Answers to this question varied widely and as can be assumed; larger agencies with the highest number of employees represented more of the sample than smaller ones with fewer employees. The top three entities responding were the Department of Health and Human Services, Department of Transportation, and the Department of Environmental Protection.

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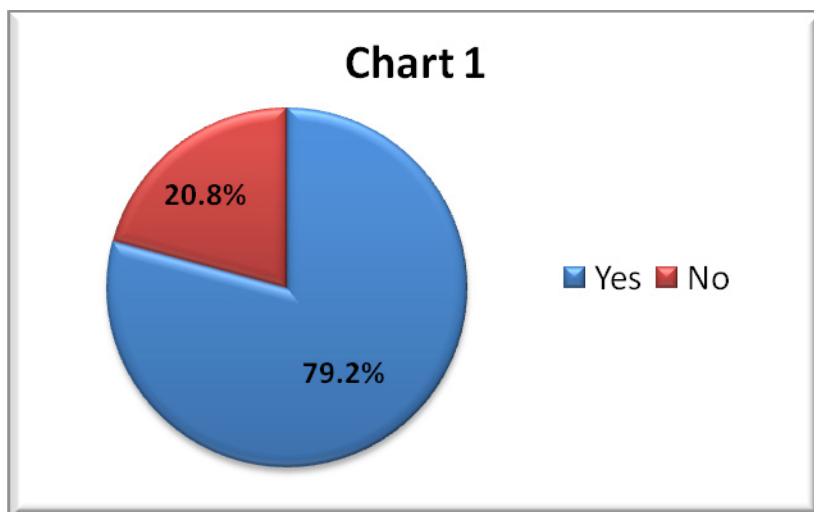
Question 2:

The next question of the survey inquired as to whether the recipients were aware of their agency's consolidation of technology services. As can be seen below nearly 80 percent of respondents were aware of the consolidation and continued to answer the remainder of the survey. The survey automatically ended for those who responded "No" to this particular question, since they would be unable to adequately answer the remaining questions. The question and results follow along with a graphic representation in Chart 1.

Are you aware of your agency's consolidation of technology services with the Office of Technology?

Yes = 168 (79.2%)

No = 44 (20.8%)

Nearly 80 percent of respondents were aware of the consolidation and continued to answer the remainder of the survey.

Question 3:

The initial question for those employees who were aware of the consolidation effort was in regard to their satisfaction with the level of communication they received from the Office of Technology. Eighty-five, or just over 53% of the responses indicated that the level of communication has improved since being consolidated, while 48 (30%) indicated that it had stayed the same. These figures combined show that 133, or roughly 83%, find that the communication has at least stayed the same, if not improved. This is an encouraging number considering the challenges of consolidating agency technology services. **Chart 2 shows a graphic representation of the responses, while Chart 3 shows a combined percentage of responses that communication has stayed the same or improved respectively.**
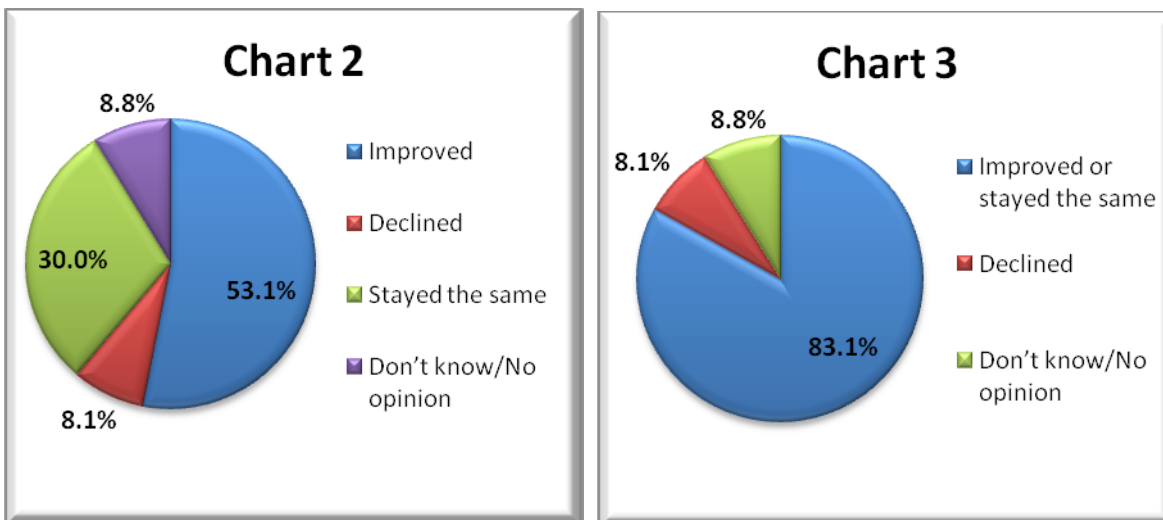
What is your opinion on the level of communication by the Office of Technology on policies, procedures, and technology offerings?

The level of communication has improved = 85 (53.1%)

The level of communication has declined = 13 (8.1%)

The level of communication has stayed the same = 48 (30%)

Don't know/No opinion = 14 (8.8%)

Chart 2 — Improved 53.1%, Stayed the same 30.0%, Declined 8.1%, Don't know/No opinion 8.8%

Chart 3 — Improved or stayed the same 83.1%, Declined 8.1%, Don't know/No opinion 8.8%

Question 4:

On the issue of the quality of equipment and software provided by the OT, the largest response was that it had stayed the same. Sixty-eight (42.5%) of the responses to this question indicate as such. Closely following was the opinion that the consolidation with the OT has improved these services with 58 (36.3%) of the responses. These two responses combined accounted for 126 (78.8%) of the data, while only 19 (11.9%) felt that the quality of equipment and software had declined. **Chart 4 displays the results as collected, and Chart 5 displays a combined total of "improved" and "stayed the same" responses respectively.**
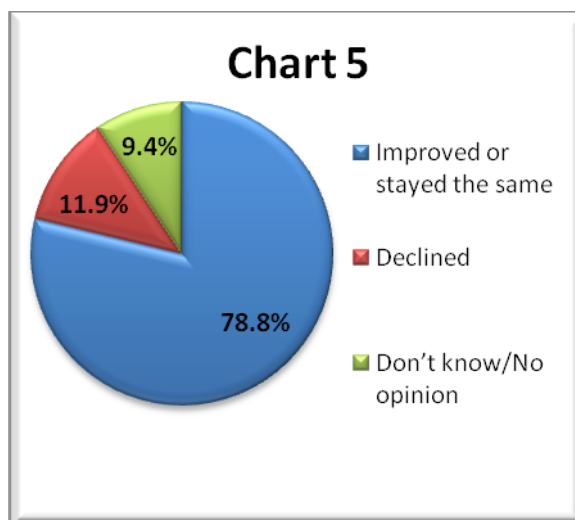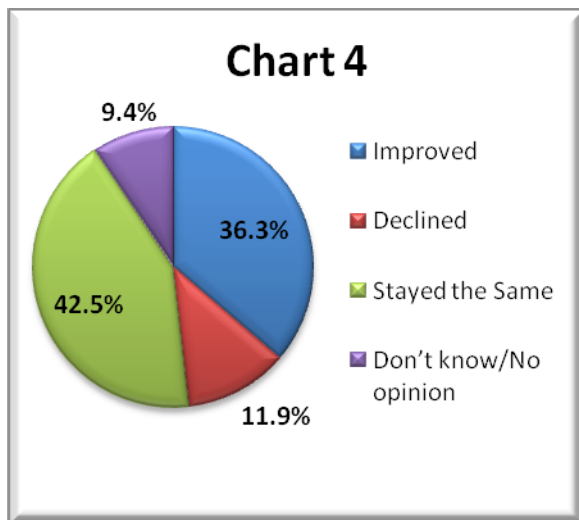
What is your opinion of the quality of equipment and software since the consolidation?

The quality of equipment and software has improved = 58 (36.3%)

The quality of equipment and software has declined = 19 (11.9%)

The quality of equipment and software has stayed the same. = 68 (42.5%)

Don't know/No opinion = 15 (9.4%)

Question 5:

The level of service and support received from the OT resulted in marks not unlike those in regard to equipment and software. The opinion that service and support has improved was the most common response with 68 (42.5%) of the sample. Also, 120 (75%) of respondents believe that services have at least stayed the same. **Chart 6 displays the original responses, and Chart 7 displays the combination of "improved" and "stayed the same" responses respectively.**
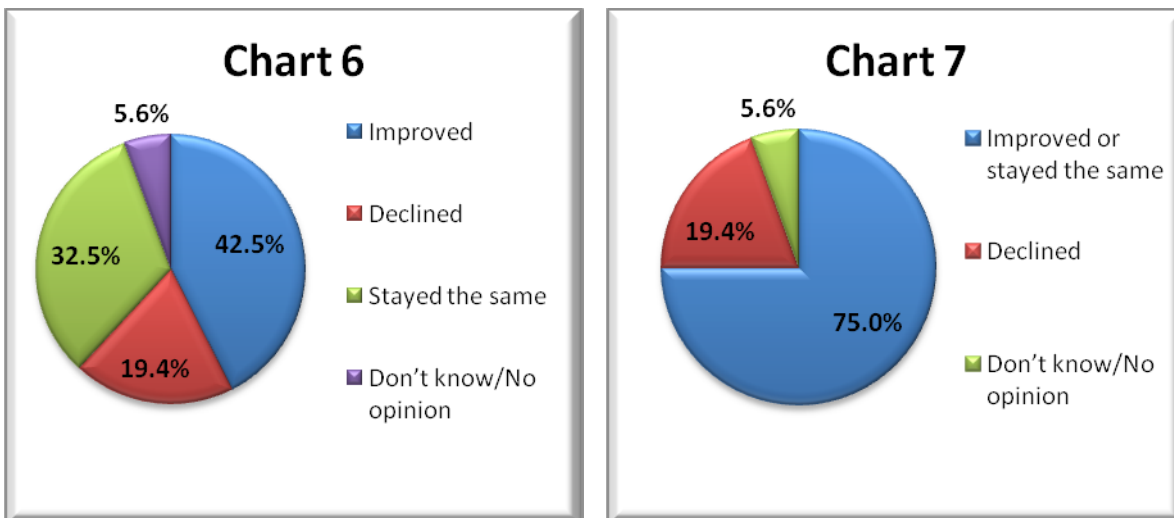
What is your opinion on the level of service and support since the consolidation of your agency's technology services?

The level of service and support has improved = 68 (42.5%)

The level of service and support has declined = 31 (19.4%)

The level of service and support has stayed the same = 52 (32.5%)

Don't know/No opinion = 9 (5.6%)

Questions 6 and 7:

The next two questions were grouped together because one is dependent on the other. Question six inquired as to how many of the individuals responding were using the Hewlett-Packard (HP) computers purchased on the most recent statewide contract for computers. Although only 35 (21.9%) were using the HP machines, the initial satisfaction level was very high. When asked their assessment of the new computers, 33 (94.3%) respondents stated they were satisfied. This is compared to only 2 respondents who were not. **Chart 8 displays the responses for whether the respondent is using an HP computer, and Chart 9 displays the satisfaction results.**

Are you currently using a Hewlett-Packard (HP) computer that was recently installed under the new statewide computer contract?
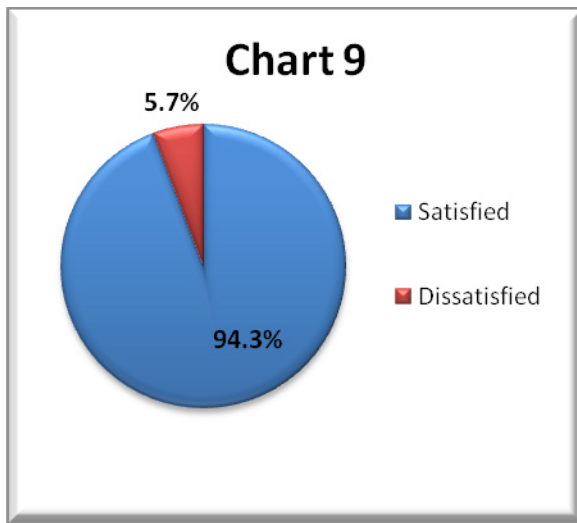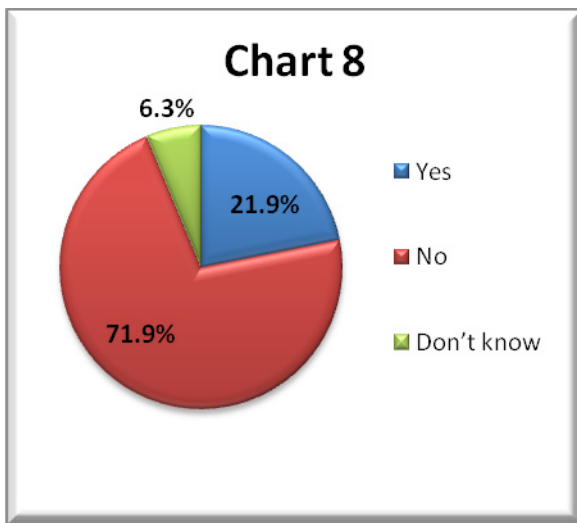
Yes = 35 (21.9%)

No = 115 (71.9%)

Don't know = 10 (6.3%)

If yes, what is your assessment of the HP computer that you are using?

I am satisfied with my HP computer = 33 (94.3%)

I am dissatisfied with my HP computer = 2 (5.7%)

Question 8:

      This question requested an overall assessment on the consolidation of technology services. The highest response level was 65 (40.6%) who believed that they had seen an improvement in technology services overall. Again, this number combined with those who stated that the services have stayed the same represent a large majority of the responses to this question with 111 (69.4%). Less than 20 percent of the respondents stated that services had declined. **Chart 10 displays the data as reported, and Chart 11 displays the "improved" and "stayed the same" responses combined respectively.**

What is your overall opinion on the consolidation of technology services in your agency?

      Overall technology services have improved since the consolidation = 65 (40.6%)

      Overall technology services have declined since the consolidation = 31 (19.4%)

      No noticeable change in technology services since the consolidation = 46 (28.8%)

      Don't know/No opinion = 18 (11.3%)

Chart 10

- Improved — 40.6%
- Declined — 19.4%
- No change — 28.8%
- Don't know/No opinion — 11.3%

Chart 11

- Improved or No Change — 69.4%
- Declined — 19.4%
- Don't know/No opinion — 11.3%
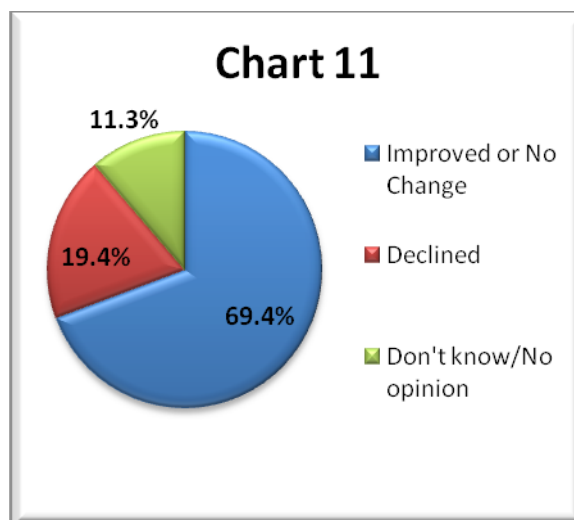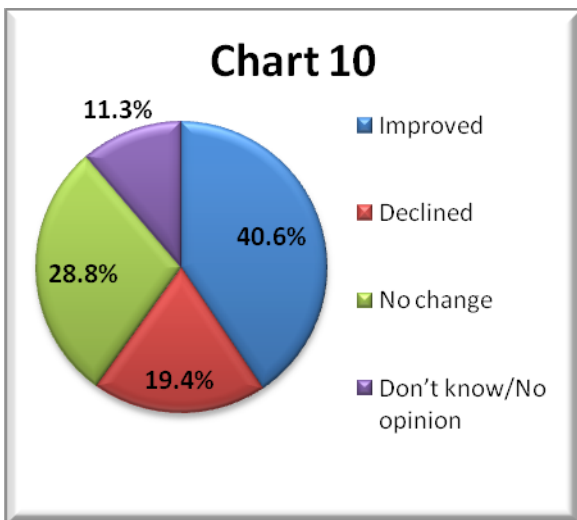
Additional Comments:

The final portion of the survey allowed respondents to provide any additional comments regarding their experience with the Office of Technology since the consolidation. Fifty-five of the 212 respondents offered additional comments which were a fairly even mixture of positive and negative comments. In the majority of positive comments, respondents took the opportunity to state that they were satisfied with OT services, and in some cases commended certain OT staff for their service. Negative comments varied more in subject matter, with the only noticeable pattern consisting of individuals complaining about the slow speed of computers and/or the network, and some complaints about the dissatisfaction with OT's response to technical problems. Upon review, the Legislative Auditor determined that the additional comments were not inconsistent with the data provided by the rest of the survey and no patterns of specifically concerning issues were cited.

Fifty-five of the 212 respondents offered additional comments which were a fairly even mixture of positive and negative comments.

Conclusion

The Legislative Auditor's survey of state employees regarding the services received from the Office of Technology and the consolidation effort were generally positive. The statistics show that a majority of employees with knowledge that their agency's technology services had been consolidated believe that the services have either improved or at least stayed the same. The Legislative Auditor recognizes the challenges of consolidating many individual information technology sections into a single entity. For this reason, the maintenance of service levels was recognized as a positive response. Going forward, the Office of Technology should always strive to provide the best customer service possible, but for the purposes of this survey the maintenance of continuity was seen as encouraging. **The Secretary of the Department of Administration, the Chief Technology Officer, and the Office of Technology should be commended for their apparent success during this transition period.**

Upon review, the Legislative Auditor determined that the additional comments were not inconsistent with the data provided by the rest of the survey and no patterns of specifically concerning issues were cited.

ISSUE 2

The Legislative Auditor's Random Check of 15 Retired Hard Drives Found That Appropriate Wiping Procedures Were Performed. However, the Office of Technology Should Also Be Performing Random Checks of Retired Computer Hard Drives.

Issue Summary

The Office of Technology issued the "End of Life Disk Drive Handling Procedure" in September 2006, which established the protocol state agencies must take when disposing computer hard drives. The procedure specifically outlines the wiping of retired computer hard drives, and it requires random checks by Office of Technology audit staff of state computer hard drives that are for sale to the public at Surplus Property. Since implementing the procedure in September 2006, the Office of Technology has only conducted one random check, of which the findings have yet to be finalized. The Legislative Auditor's staff conducted its own random check of computer hard drives at Surplus Property, and found that the hard drives had been appropriately wiped.

The procedure requires the Department of Defense (DoD) wipe for hard drives that are being retired from state agencies and transferred to Surplus Property.

Computer Hard Drives are Required to be DoD Wiped Before Being Sold to the Public to Prevent Possible Access to Sensitive Information

The "End of Life Disk Drive Handling Procedure" (EOL procedure) issued in September 2006 has since been revised and was reissued in April 2009. The procedure requires the Department of Defense (DoD) wipe for hard drives that are being retired from state agencies and transferred to Surplus Property. The following is the method that the Office of Technology (OT) prescribes for wiping computer hard drives:

> *Approved methods to properly destroy the data utilizing a physical ... or logical method, e.g. overwriting data **7 or more times** using a software tool designed for this purpose. This is sometimes referred to as the <u>Department of Defense wipe</u> (DoD wipe).*

Additionally, the DoD wipe prescribed by the Office of Technology is an industry standard for overwriting information on hard drives. According to a June 2001 Department of Defense memorandum entitled, "Disposition of Unclassified DoD Computer Hard Drives", overwriting is defined as the following:

> *The process for replacing information (data) with meaningless data in such a way that meaningful information cannot be recovered from a hard drive.*

Department of Defense hard drive wipes are important because sensitive information could be compromised without such procedure, by way of computers being sold to the public from Surplus Property. The OT procedure concerning the wiping of computer hard drives applies to the following:

> *All Departments (including Agencies, Boards, and Commissions) within the Executive Branch of West Virginia State Government, excluding constitutional officers, the West Virginia Board of Education, the West Virginia Department of Education, and the county boards of education. However, the WVOT recommends that all agencies including those excluded above, follow this procedure.*

As part of this review, the Legislative Auditor contacted all state constitutional offices, the Board of Education, and the Department of Education to assess whether these entities observed the "End of Life Disk Drive Handling Procedure", or a similar policy. With the exception of the Department of Agriculture and the West Virginia Board of Education, all offices exempted from the OT procedure replied to the Legislative Auditor's request. After reviewing the responses, it was found that all of the offices that responded to the inquiry employ the OT recommended DoD wipe, or a similar procedure to wipe used computer hard drives. Additionally, the Joint Committee on Government and Finance uses the DoD wipe method or destroys the hard drive.

Department of Defense hard drive wipes are important because sensitive information could be compromised without such procedure, by way of computers being sold to the public from Surplus Property.

All of the exempt offices that responded to the inquiry employ the OT recommended DoD wipe, or a similar procedure.

The April 2009 Office of Technology Procedure Now Certifies Computer Hard Drives are DoD Wiped by OT Staff

When the Legislative Auditor's analysis began in early 2009, the Office of Technology was following the criteria set forth in the September 2006 EOL procedure. The following excerpt from the September 2006 procedure states OT's original procedure for wiping computer hard drives:

> *The Agency must certify that the disk drive contained in any computer sent to Surplus Property has been properly prepared for disposal or re-use.*

This required state agencies to certify computer hard drives had been properly DoD wiped. Also, in accordance with the EOL procedure, state agencies placed a tag on the outside of the CPU tower, or on the outside case of a notebook computer certifying a DoD wipe had been completed. After an agency had completed this procedure, the retired computer could then be sent to Surplus Property, where it could be sold to the public.

In April 2009, the Office of Technology revised and reissued the "End of Life Disk Drive Handling Procedure." The updated EOL procedure now requires that the Office of Technology certify that the computer hard drive has been properly wiped, rather than state agencies. The revised procedure states the following:

> *The WVOT[1] must certify that the disk contained in any computer released to Surplus Property has been properly prepared.*
>
> *The WVOT will place certification tag onto each wiped computer in a visible, prominent location. All tags must follow the approved format.*
>
> *Certification tagging must **not** provide details of the methods used to destroy the contents of the disk drive(s).*

The updated EOL procedure now requires that the Office of Technology certify that the computer hard drive has been properly wiped, rather than state agencies.

1　　　*WVOT refers to the Office of Technology (OT).*

However, the WVOT must retain documentation of the method used for a minimum of six years, including the serial number of the device, and that date and method of data destruction.

In order to certify that retired hard drives are properly DoD wiped, OT has assigned a full-time staff person to work on-site at Surplus Property to perform end-of-life disk wiping. **According to the OT, the full-time staff person at Surplus Property performed a DoD wipe on 2,682 computers from June 2007 to February 2009.** Figure 1 displays the four routes used by Surplus Property staff when sorting incoming retired computers. The first route represents computers that have no DoD tag. These are transferred by Surplus Property staff to the OT work area for OT staff to perform the wipe before being moved to the sales floor. The second route represents computers that are tagged as being DoD wiped at the agency level, but do not have the official OT tag. These computers are also transferred to the OT work area for OT staff to perform the wipe before being moved to the sales floor. The third and fourth routes show computers that have a certification tag showing a DoD wipe at the state agency level which are transferred to the sales floor. Although the third and fourth routes both include computers that have official certification tags, the difference is that in the third route, computers are tagged by an agency that has OT staff assigned to it as a result of the consolidation of state government technology services. OT staff at the agency level would have certified that the computer was DoD wiped as stated in the EOL procedure. With the fourth route, the computer is tagged as being DoD wiped by a state agency that does not have OT staff assigned to it. The Legislative Auditor observed that these four routes were in place before the procedure was officially reissued in April 2009. **The updated EOL procedure requires OT staff to certify computer hard drives are properly prepared for Surplus Property, though there is no indication that computers that fall under routes three and four are actually DoD wiped.** As shown by Figure 1, the actual practices performed by OT do not match the procedures described in the EOL procedure.

In order to certify that retired hard drives are properly DoD wiped, OT has assigned a full-time staff person to work on-site at Surplus Property to perform end-of-life disk wiping.

Computer hard drives which have not been properly DoD wiped could pose a potential liability for the state.

Figure 1

Routes That Retired Computers Transfer to Surplus Property
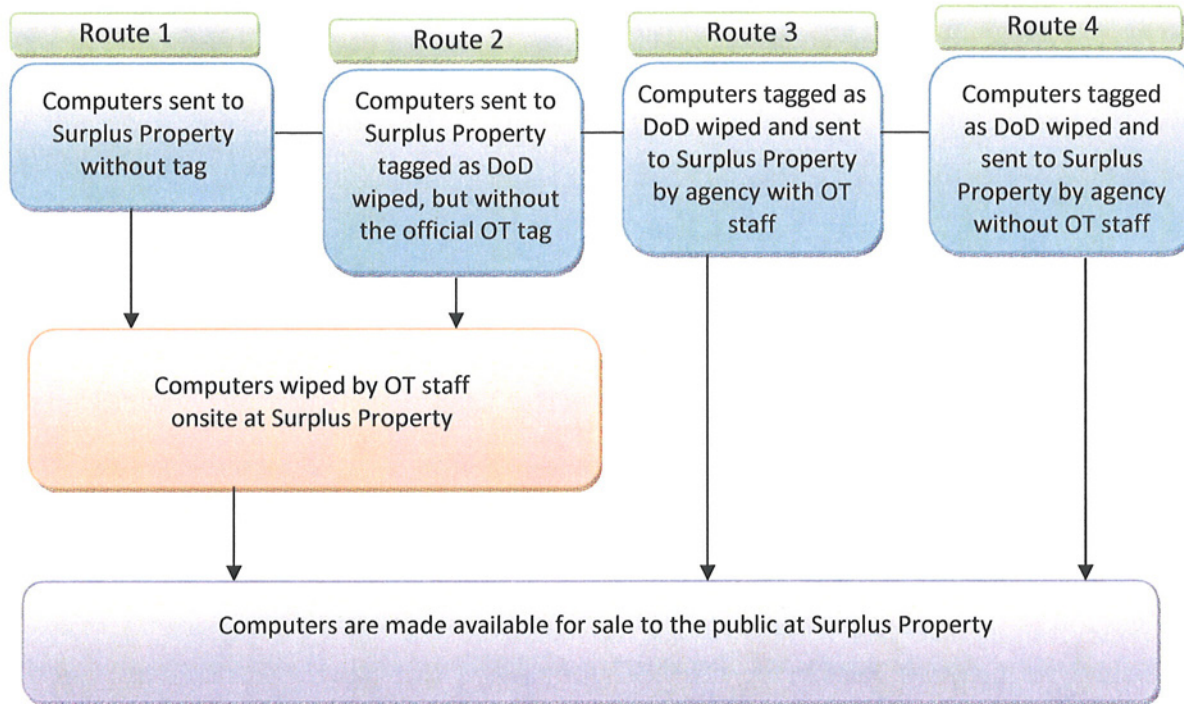
The Office of Technology Has Not Been Following Its Own Audit Procedure, Which May Lead to Sensitive Information Being Compromised

Computer hard drives which have not been properly DoD wiped could pose a potential liability for the state. According to the April 2009 "End of Life Disk Drive Handling Procedure," hard drives used by state agencies could contain the following information:

Protected Health Information (PHI), Personally Identifiable Information, Social Security Numbers (SSN), or credit card data.[2]

2   *The Office of Technology defines Personal Health Information (PHI) as: health*

Furthermore, the April 2009 procedure states the disposal of computer media, such as hard drives could create the following risks:

> *Information security risks and legal liabilities for the State of West Virginia, related to the potential unauthorized disclosure of legally protected and sensitive data, violations of software license agreements, etc.*

To ensure that sensitive information is not compromised and that computer hard drives are properly DoD wiped, the OT procedure requires random checks by OT audit staff of computers at Surplus Property. The frequency of random checks was never established in the procedure. The following procedure was established by OT regarding random checks of computers:

To ensure that sensitive information is not compromised and that computer hard drives are properly DoD wiped, the OT procedure requires random checks by OT audit staff of computers at Surplus Property.

> *OT staff will perform random checks of tagged equipment received by Surplus Property to assure the appropriate data destruction has been performed. These audits will be documented by agency, sign off technician, equipment type and serial number.*

The random checks of computers, as outlined above, are the measures used to assess whether computer hard drives have been properly wiped. This section of the procedure was also included in the original September 2006 EOL procedure. **The OT audit staff did not conduct a random check of surplus computers until September 2008.** This has been the only audit conducted by OT since the procedure was created. Additionally, the audit report stating the findings for the September 2008 audit has not been finalized, and to date remains incomplete. The Office of Technology offers the following explanation to why the audit remains incomplete:

Additionally, the audit report stating the findings for the September 2008 audit has not been finalized, and to date remains incomplete.

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information transmitted by or maintained in electronic media used to identify an individual, which is created, used, or disclosed in the course of providing health care services such as diagnosis or treatment. Examples include: names, phone numbers, medical record numbers, photos, etc. Additionally, OT defines Personally Identifiable Information (PII) as: all protected and non-protected information that identifies, or can be used to identify, locate, or contact an individual.

At the time, it was determined that the process has changed and that the procedure no longer matched the process being followed.

While the procedure may have changed, it is important that OT avoid having long periods of time transpire without conducting a random audit. Random periodic checks test whether the OT's procedure for wiping computer hard drives is being followed, and is an additional safeguard to prevent sensitive information from being made available to the public through computers sold by Surplus Property. **The Legislative Auditor recommends that the Office of Technology follow its own procedure by completing random periodic checks of computer hard drives to ensure sensitive information is not compromised.** As stated previously, OT's procedure does not establish the frequency as to how often OT audit staff will conduct random checks. The Legislative Auditor finds that one audit review in almost a three-year period (September 2006 – June 2009) is inadequate, and recommends more frequent audit reviews. The Secretary of Administration stated that one of the reasons that more audits were not conducted is because the audit program is still in development. The Legislative Auditor recommends that developing an audit program should be given greater priority. The Legislative Auditor also recommends that the Office of Technology consider modifying the audit program to include:

The Legislative Auditor finds that one audit review in almost a three-year period is inadequate, and recommends more frequent audit reviews.

1. a recommended minimum number of annual checks,
2. a statistically appropriate sample size of hard drives, and
3. a determination of whether the random sample should be stratified or not.

Stratification of the sample should be considered on the grounds that the whole population of computers has distinct subpopulations with different risk factors of an improper wipe. For example, computers that are DoD wiped by the technician assigned to Surplus Property (Figure 1, Routes 1 and 2) may have a lower risk for an improper wipe than a computer that is labeled as being DoD wiped at the agency level (Figure 1, Routes 3 & 4), and not reviewed by the OT technician at Surplus Property. If it is possible for OT to identify the hard drives that transferred from each of the four routes, then it would be wise to stratify

the sample and review more of the hard drives that have a greater risk of being improperly wiped. If it is not possible to identify the routes that a hard drive transferred in from, then the sample cannot be stratified. These modifications, as recommended by the Legislative Auditor, should improve the random audit check process.

The Legislative Auditor Conducted an Audit of 15 Computers at Surplus Property and Found That Hard Drives Had Been Wiped

The Legislative Auditor had questions concerning the risk involved with computers which were released to Surplus Property, and if the Office of Technology was in compliance with its "End of Life Disk Drive Handling Procedure." At the time of the Legislative Auditor's inquiry, the Office of Technology was under the original procedure, which was issued in September 2006.

On March 2, 2009, the Legislative Auditor conducted an audit of 15 computer hard drives which were positioned in various locations in the Surplus Property warehouse in Dunbar, WV. All of the computers selected had the Windows XP operating system reinstalled on their hard drives.[3] First, the Legislative Auditor started each computer to ensure the operating system had been reinstalled and the computer was functional. Second, the Legislative Auditor examined the hard drive by searching for certain file types, such as word processing documents and spreadsheet files. Finally, the Legislative Auditor manually examined all files and folders on the hard drive, looking for any residual information which was not found in the original search. Upon the manual review, it was found that 2 of the 15 computers selected by the Legislative Auditor's staff had residual information remaining on the hard drives.

One of the computers analyzed had the username "Ron Burgandy," instead of the default system username "Administrator." The computer, according to its tag, had been DoD wiped. Computer hard drives that have been DoD wiped should not have usernames, such as "Ron Burgandy,"

On March 2, 2009, the Legislative Auditor conducted an audit of 15 computer hard drives which were positioned in various locations in the Surplus Property warehouse.

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3   *If the computer originally had the Microsoft Windows XP operating system installed, it is reinstalled following the DoD wipe.*

remaining on it. Additionally, there were several folders that used the "Ron Burgandy" username, such as: "Ron Burgandy's Documents"; "Ron Burgandy's Music"; and "Ron Burgandy's Pictures."   These folders were most likely created by Windows XP as a default since the username was modified to "Ron Burgandy." It must be noted that there were no files found within these folders, but the Legislative Auditor was concerned that this hard drive may not have been properly DoD wiped, and contained recoverable residual files. Additionally, the Legislative Auditor also found a computer hard drive that had an inordinate amount of residual internet files, as compared to others examined. The computer, according to its tag, had been DoD wiped. As a result of finding these two computers with residual files, the Legislative Auditor conducted a forensic analysis of the hard drives using EnCase® computer forensic software. **The forensic analysis enabled the Legislative Auditor to make the determination that the computers were appropriately DoD wiped, and the hard drives were modified after the computers were wiped.** Similar to the intention of the EOL audit procedure, the Legislative Auditor's review of retired computer hard drives at Surplus Property proved beneficial because it gives some assurance that computer hard drives are being wiped before being sold to the public.

It must be noted that there were no files found within these folders, but the Legislative Auditor was concerned that this hard drive may not have been properly DoD wiped.

Conclusion

In September 2006, the Office of Technology issued the "End of Life Disk Drive Handling Procedure," requiring computer hard drives to be DoD wiped before being sold to the public through Surplus Property. The procedure also requires OT audit staff to perform random checks of computers that have reportedly been DoD wiped. The Office of Technology conducted only one random check since the procedure's creation in September 2006. The findings of the random check have still not been finalized. The Legislative Auditor's staff performed its own random check of computers at Surplus Property, and found that information was removed before being offered for public sale. Although, the Legislative Auditor commends the Office of Technology for creating a procedure for dealing with retired computer hard drives, OT should follow its own section of the procedure requiring random checks. These checks are an important layer of quality control to determine if the procedure to wipe hard drives is being followed.

The forensic analysis enabled the Legislative Auditor to make the determination that the computers were appropriately DoD wiped, and the hard drives were modified after the computers were wiped.

Recommendations

1. *The Legislative Auditor recommends that the Office of Technology follow its own procedure to conduct random checks of retired computer hard drives.*

2. *The Legislative Auditor recommends that the Office of Technology revise its "End of Life Disk Drive Handling Procedure" or create an audit program that establishes: a minimum number of annual random audits of retired computers; a minimum number of computer hard drives to be reviewed in an audit; and determine whether the sampling should be random or stratified.*

Appendix A: Transmittal Letter

WEST VIRGINIA LEGISLATURE
Performance Evaluation and Research Division

Building 1, Room W-314   John Sylvia
1900 Kanawha Boulevard, East   Director
Charleston, West Virginia 25305-0610
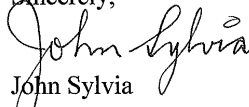(304) 347-4890
(304) 347-4939 FAX

November 13, 2009

Robert W. Ferguson, Jr., Secretary
Department of Administration
Capitol Building 1, Room E-119
1900 Kanawha Blvd., East
Charleston, West Virginia 25305

Dear Secretary Ferguson:

      This is to transmit a draft copy of the Performance Review of the Office of Technology. This report is scheduled to be presented during the November 18, 2008 interim meeting of the Joint Committee on Technology at 11:00am in the Senate Finance Committee Room. It is expected that a representative from your agency be present at the meeting to orally respond to the report and answer any questions the committees may have.

      We request that your personnel not disclose the report to anyone not affiliated with your agency. Thank you for your cooperation. If you have any questions or concerns please contact Denny Rhodes, Research Manager, at 347-4890.

Sincerely,

John Sylvia

John Sylvia

c: Kyle Schafer, Chief Technology Officer
    Office of Technology

Joint Committee on Government and Finance

Appendix B: Agency Response

STATE OF WEST VIRGINIA
DEPARTMENT OF ADMINISTRATION
OFFICE OF TECHNOLOGY
State Capitol
Charleston, West Virginia 25305

Joe Manchin III
Governor

Robert W. Ferguson, Jr.
Cabinet Secretary

Kyle Schafer
Chief Technology Officer

November 17, 2009

Denny Rhodes, Research Manager
West Virginia Legislature
Performance Evaluation and Research Division
Building 1, Room W-314
1900 Kanawha Boulevard, East
Charleston, West Virginia 25305

PERFORMANCE EVALUATION

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AND RESEARCH DIVISION
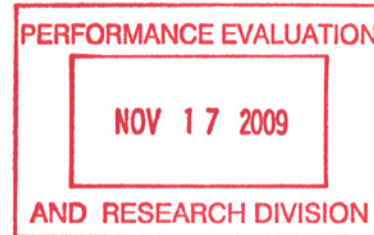
Dear Mr. Rhodes:

Thank you for providing to the Office of Technology via email dated November 13, 2009, the two draft issues of the Office of Technology report that is to be presented at the Joint Committee on Technology.

I will be in attendance for the Joint Committee on Technology meeting Wednesday, November 18, 2009, at 11:00 am in the Senate Finance Conference Room.

Sincerely,

Kyle Schafer

Kyle Schafer,
Chief Technology Officer

Cc: Donna Lipscomb, Legislative Liaison
        Dept. of Administration

One Davis Square 321 Capitol Street – P.O. Box 50608 Charleston, WV 25301 Phone: (304) 558-3784 Fax: (304) 558-0136