



COLORADO
Division of Central Services
Department of Personnel
& Administration



*IDS/MFP
Program Expansion
Business Case*

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Revision History

Name	Date	Reason For Changes	Version
Brian Pool	9/26/13	Draft Business Case Details	1.0
Brian Pool	10/30	Update for CDPS	1.1
Brian Pool	11/26	Updated for DMVA, CDLE,	1.2
Brian Pool	11/30	Updated for OIT, GOV and others.	1.3
Chrissy Collier	12/5	Updated analysis of Interviews, Business case & QA.	1.4
Teddy Abad	12/6	Updated analysis of Managed Print Services	1.5
Brian Pool	1/15/14	Updated with expanded Exec Summary	1.6
Brian Pool	1/27/14	Updated with Appendix of Print Coverage	1.7
Brian Pool	3/12/14	Updated with 7 Year Projection	1.8
Teddy Abad	5/12/14	Updated Relocation of Personal Print Value	1.9

1.0 Executive Summary

The Colorado Office of Information Technology (OIT) and The Colorado Department of Personnel and Administration (DPA) are in the process of transferring and consolidating responsibility for printers and Multi-Functional Devices (MFDs) that offer printing, copying, fax and scanning technology to the Division of Central Services Integrated Document Solutions (IDS) MFD Program.

To highlight the financial and business benefits the MFD Program provides, DPA and OIT collaborated to engage North Highland to assess the current state and develop the business case for the inclusion of the Executive Departments that have not yet been incorporated into the program. By analyzing current usage of printers, faxes, copiers and scanners, as well as the key business functions supported by these devices, DPA and OIT will be able to better optimize the number of devices and transitioning to the use of MFDs. Developing this approach involved identifying the business requirements for devices, performing an inventory analysis and developing a business case highlighting the financial and customer impact of this change. This document contains the details of both the analysis and the resulting business case.

Estimates of current state

- Current # of devices 9,371
 - # of Personal Printers (PP) 6,288
 - # of Network Printers (NP) 2,285
 - # of Multi-Functional Devices (MFD) 1,003
- Current ratio of employees per device 2.6 : 1
- Current estimate # of total clicks / year 123M
- Current estimate # of PP clicks / year 17M

	Personal *	Network*	MFD	Managed Print Services	Total
Per Black & White Image	\$0.035 - 0.16	.023 - .061	.033	\$.02 (DCS FEE Included)	
7 Year Statewide Savings		\$5.4M		\$11.2M	22.6M

In short, the potential statewide replacement and operating cost savings over 7 years **conservatively totals at least \$5.4M**. These savings come from replacement (\$1.8M) and operating costs (\$3.6M).

- Increasing the ratio of employees to printing assets from the current 2.6 : 1 to 6 : 1 (Note the industry standard is 8 : 1 and recent progress at CDPHE has resulted in 6.8 : 1).
- Replacing only necessary desktop printers with printers having the lowest Total Cost of Ownership (TCO).
- Improving overall utilization of feature-rich and centralized MFDs, including eFax, Scan to Network etc.
- Leveraging statewide volumes and standards to negotiate lower vendor costs for MFDs and printers.
- Leveraging statewide standard devices to streamline support, troubleshooting and maintenance.

An **additional \$17.2M** can be saved over 7 years by using the right Managed Print Services contract to reduce the cost per click by an estimated average of 2 cents for each of the state's 123M clicks. This is addition to the ability to pro-actively manage and monitor the entire statewide MFD and printer fleet.

Bottom line impact of recommendations in this document

- Saving replacement costs of 5,329 devices (at \$350 each) to achieve a 6:1 ratio \$1.8M
 - Saving (\$0.06) per click x 8.5M DCS MFD RATE \$3.6M
 - Managed Print Services (\$0.02 x 123M clicks) \$17.2M
- Grand Total \$22.6M**

2.0 Current State

Today, most agencies possess only fragmented and incomplete details regarding their printer/MFD fleets. Although some departments, divisions or agencies keep records of device purchases, without a desk to desk inventory, only general estimates of the number of printers are currently available. Similarly, there are no statewide standards for printer device purchases. Some vendor agreements (e.g. DOC & Dell) and initiatives at the department level (e.g. or CDPHE’s Printer Optimization), have proven quite effective & efficient. However, far more likely to find dozens of different models of office printers are routinely purchased and deployed without statewide process or support.

After deployment, departments are unaware how much they spend on maintaining printers. Depending on print volumes, operating costs such as ink, paper, service and support quickly overwhelm the purchase cost by a factor of up to 9 to 1 over the life of the device. For example:

- A low volume individual printer from HP like the LaserJet Pro 1102W costs about \$350 new, but actually has a Total Cost of Ownership (TCO) after 5 years of over \$16,800.
- A more efficient networked Kyocera FS 4200DN costs about \$900 new, but actually has a TCO after 5 years of just \$4,100 (including the \$900 purchase price) because that printer manages costly ink far more efficiently than its HP competition.

In every case, the state cannot reliably document the costs of printers they own with basic metrics such as how many users each printer serves and how many pages it prints a month. These foundational issues, and their consequent statewide impact, are summarized in Table 1-1, Issues in Current State Assessment.

Issue	Impacts
Incomplete and Inaccurate Printer Inventory	<ul style="list-style-type: none"> • Extent of effort required for implementing configuration management cannot be accurately determined. • Configuration management cannot be completed unless all devices are known. • Inventory information cannot be audited against purchase information.
No Standardization of Devices	<ul style="list-style-type: none"> • Proliferation of devices requires additional technical skills to support. • Toner and repair kits for each type and model must be purchased and stored. • Aging and discontinued devices are kept in circulation increasing maintenance needs. • Discounts in bulk supply purchases can not be achieved increasing acquisition cost.
Inadequate Configuration Management for Printers	<ul style="list-style-type: none"> • Accurate usage information (volume, coverage, color, user, location) cannot be used in financial or management decisions. • Under or over utilized devices cannot be identified. • Printers problems cannot be consistently diagnosed remotely thus increasing time to resolve. • Support costs are increased.
Inconsistent Tracking of Printing Costs	<ul style="list-style-type: none"> • Spending information cannot be analyzed at the appropriate level for comparison against usage numbers. • Spending information cannot be analyzed above the Department level without extensive manual intervention. • Network based device costs cannot be controlled and have increased above appropriate levels for current and future needs.

Issue	Impacts
Limited Visibility into Printer Incident Reports	<ul style="list-style-type: none"> • Trends in printer incidents cannot be identified and used to proactively resolve printing issues. • Lack of root cause analysis increases cost of future repairs and the occurrence of downtime. • Technical support cannot be quantifiably analyzed reducing the ability to determine if current support is adequate.
Limited Sharing of Devices	<ul style="list-style-type: none"> • Reduced efficiency when users are unable to find a replacement device. • Negative feelings fostered between departments. • Personal printers often cannot duplex print which would allow conservation of paper. • Higher per page cost of personal printers unnecessarily drives up printing costs. • Lost productivity when printing to devices located a significant distance from the employee's work location.

2-1 Current State Assessment

The issues described above provide a business case framework for the expansion of the IDS MFD Program. With the goal of resolving these issues, the state can better manage and reduce costs associated with output (printing, copying and faxing). In the current environment, per page costs are rising, in part due to ink costs as well as lower utilization of printers. Visibility into these costs is low because metrics on usage and volume have not been captured, preventing even basic analysis. This despite the knowledge that printing costs are likely to continue to stay high until statewide changes are made.

A logical approach to reducing costs is the deployment of high speed, multifunctional networked devices which enable users to share faster and more efficient devices. This by definition would reduce the variation and quantity of print devices in the fleet and therefore reduces associated support and supply costs. In addition to reducing costs, multifunctional device technology offer service enhancements such as workflow, secure printing and usage analysis.

The achievement of these cost savings, however, does not come from a simple rollout of the MFD hardware. This type of cost reduction requires the implementation of process improvements, change management and supporting ongoing thought leadership to fully sustain the effort and change the print culture for state employees.

2.1 Background

OIT and DPA are investigating ways to reduce the total number of copiers, printers, fax machines and light scanning equipment distributed throughout its facility as well as right-size their fleet.

2.2 Current Device Management

The state uses a variety of vendors, to supply copiers and fax machines as well as provide support. Departments are responsible for identifying their own copy and fax needs. Machine, toner and accessory purchases are coordinated as needed. If existing machinery is inadequate, department managers communicate their concerns to DPA. At this time, OIT or a vendor work with the department to either repair the device or provide a more productive model.

There is no formal process for evaluating all print usage in a department, but DPA offers the MFD program which delivers & maintains multi-function devices. In short, once a department identifies the need for an MFD, they generally should:

- Engage DPA to see if the MFD program can suit their business need.
- If its within the business model volume range, it is accepted the into program.
- If the TCO of the quotes exceeds the costs MFD program, they are rolled in as well.
- If the business need is outside or the TCO is less than the DPA MFP Program, they are granted a waiver. They are sent to the State Price agreement, to pick any approved WSCA vendor. Here they are open to full menus of the WSCA Price agreement.

Replacement of device may also be recommended by a vendor representative during or after a service call based on the health and age of the machine. However, there is no standard use time or planned lifecycle for device use. The same process is used for fax machines and copiers.

Printer support is provided by the OIT Service Desk, although other vendors may be engaged as needed. Currently, the OIT leverages its Deskside Support team for technical support. Department personnel are responsible for identifying their own printing needs. If a new printer is needed, the basic criteria are communicated to DPA which in turn works with the buyer to purchase the device. For personal printers, a department either purchases the device directly from a retailer or reimburses an employee for their purchase. Toner and accessories for printers are purchased directly from any number of vendors. If existing machinery is inadequate, users may (or may not) communicate their concerns to DPA. OIT then sends technical support to repair the device. If the device is beyond repair, the vendor or others may recommend replacement. There is no standard use time or planned lifecycle for device use because usage of a device is not generally monitored.

Scanners are playing an increasingly important role in the regular business process at Departments. Departments essentially now purchase them directly from a local retailer and use them for ad hoc scanning of pictures or graphics for inclusion in other documents. Scanners are not tracked as a purchase within a common database and exact counts and costs are not practically knowable.

2.3 Problems/Issue Descriptions

OIT and IDS requested an analysis of the device proliferation among printers, copiers, scanners, and fax machines with an expressed interest in consolidating these devices into all-in-one types in order to save space and reduce costs. The analysis revealed several problems unnecessarily increasing costs and reducing productivity.

2.3.1 Incomplete and Inaccurate Printer Inventory

OIT and IDS have limited tracking of printers and no statewide inventory. Personal printers are common throughout the state and are not networked. OIT can only track networked devices and IDS does not have a clear identifier of which purchases are printers. In addition, once a printer is deployed, there is no process to associate the device with the department that purchased it. OIT only tracks the printers by a port location and not owner. There was no systematic way to tell how many printers are in a given department. Questionnaires were distributed to user groups, however the process, sources and methods used to survey for inventory was either not followed consistently or not feasible. Anecdotal assertions that individual printers were being appropriately purchased and utilized are insufficient to develop a strategic business case. Together, those have been the root cause of challenges related to acquisition & aggregation of the data for device counts and usage.

Impact: The lack of an accurate inventory of printers, copiers, fax machines, and scanners has wide-ranging effects and will make implementation of further recommendations more challenging than necessary. The impact of this issue is felt in the following areas:

- Extent of effort required for implementing configuration management could not initially be accurately determined.
- Configuration management cannot be completed unless all devices are known.
- Inventory information cannot be audited against purchase information.

2.3.2 No Standardization of Devices

An analysis of the printers purchased over the past three years combined with the list of printers attached to the network revealed dozens of different types and models of printers. Of these, many have been discontinued or had support diminish for their driver integration. Neither OIT nor IDS maintains a list of statewide standards, business or technical requirements that new printers must meet.

In addition to printers, there are approximately dozens of different types of fax machines and copiers.

Impact:

- Proliferation of devices requires additional technical skills to support.
- Toner and repair kits for each type and model must be purchased and stored.
- Aging and discontinued devices are kept in circulation increasing maintenance needs.
- Discounts in bulk supply purchases can not be achieved increasing acquisition cost.

2.3.3 Inadequate Configuration Management for Printers

During the course of the analysis, information regarding printers and their usage was inconsistently available. This was mostly due to very inconsistent management of printer configuration. Several printers were not set up for remote monitoring of usage or diagnosis of problems. This prevented accurate volume numbers from being retrieved. Age of printers has generally not been tracked. Additionally, neither OIT nor IDS uses an Asset Management module to monitor printer status. Inconsistent network configuration also prevented color usage and page coverage statistics from being collected and included in the analysis. The state does not appear to use a standard process for configuration management for its printers.

Impact:

- Accurate usage information (volume, coverage, color, user, location) cannot be used in financial or management decisions.
- Under or over utilized devices cannot be identified.
- Printers problems cannot be consistently diagnosed remotely thus increasing time to resolve.
- Support costs are increased.

2.3.4 Inconsistent Tracking of Printing Costs

Retrieving cost information for this business case proved challenging for all team members involved. Most costs were retrieved using various queries on the PeopleSoft database. These queries were often manual and required sifting through item descriptions rather than systematic account analysis. No official reports or queries were at the level of printing, copying, faxing and scanning costs. The lack of a formal means of communicating these costs indicates that this cost analysis is not done routinely by departments or by Materials Management.

Impact:

- Spending information cannot be analyzed at the appropriate level for comparison against usage numbers.
- Spending information cannot be analyzed above the Department level without extensive manual intervention.
- MFD costs cannot be controlled and have increased above appropriate levels for user needs.

2.3.5 Limited Visibility into Printer Incident Reports

Only basic metrics were available for Ticket involving printers. OIT had an estimate for number of calls per month and the average time per call. Data such as type of printer, originating department and type of problem were not available for analysis. This prevents management from investigating the source of these problems and analyzing trends in incident reports. As a result, support for printers is limited to reactionary tactics.

Impact:

- Trends in printer incidents cannot be identified and used to proactively resolve printing issues.
- Lack of root cause analysis increases cost of future repairs and the occurrence of downtime.
- Technical support cannot be quantifiably analyzed reducing the ability to determine if current support is adequate.

2.3.6 Limited Sharing of Devices

Most users indicated that sharing of devices across departments was not common. They cited two main reasons for this type of behavior. The first reason was that they simply were not aware of other devices in close proximity. The lack of knowledge of alternative copiers and color printers caused the most challenges for users. The second reason cited was that departments were unwilling to let other departments' personnel use their devices because they did not want to pay for another department's usage.

Additionally, personal printers make up an estimated 70 % of all printers. Some staff feels that either their work is too sensitive to be available on a public printer or repeatedly walking to a centralized device materially impacts productivity.

Impact:

- Reduced efficiency when users are unable to find a replacement device.
- Negative feelings fostered between departments.
- Personal printers often cannot duplex print which would allow conservation of paper.
- Higher per page cost of personal printers unnecessarily drives up printing costs.
- Lost productivity when printing to devices located a significant distance from the employee's work location.

3.0 Interview Summaries

3.1 CDPS

Representatives from a majority of CDPS divisions revealed that their end user printing environment is largely workable from their perspective. This essentially derives from efficiently produced grant reports, training materials, handouts and other document management needs.

- Most CDPS employees have a desk printer as well as reasonable access to MFDs. Indeed, the prevailing view appears to be that most employees should have their own printer.

- While Xerox maintains the bulk of MFDs, Ricoh now manages 2 units.
- Most individual printers are HPs while more of the latest network printers are newer Lexmarks. CDPS asked OIT for estimates on statewide pricing of HPs devices. After some time, the procurement process allowed the purchase.
- Users have reported a good experience with Xerox but less so with Ricoh. In particular, Ricoh's billing and accounting accuracy have emerged as a stumbling block at CDPS.
- Victim Services has three shared devices including one MFD. We understood that ink quality was of visible concern regarding the Xerox Cube.
- Most cost centers are able to chargeback accounting detail via personalized four digit codes.
- Many users indicated they need individual printers for productivity reasons. Some cited a need for individual printers based on confidential criminal information. It was noted that secure password printing is largely available.
- For the fast growing Identification and Instacheck teams, the floor space required by a larger MFD was seen to be a negative. Proof of Denial letters are now largely printed off individual desktop printers. There is one networked printer, but no operational accounting codes are in use.
- For the Labs, the discovery process often requires prints of reports, images, and crime scenes for DA or law enforcement. Many standard devices have issues with larger print size requirements.
- Most CBI networked printers are multifunctional except fax. All copiers can scan to email & scan to shared folders.
- Homeland Security has individual printers in each office as well as a variety of networked devices. They are working with IDS to consolidate to Xerox.
- Statewide, several resources work on CDPS contracts for copiers that vary from 30-70 per month.
- Some of the perception has been that Central Services is more expensive than other channels.

3.2 CDOT

Representatives from a majority of CDOT divisions shared their views that that printing and document management needs are increasing at CDOT. They have clearly started to replace single function copiers with multi-functional Ricoh, Xerox & Konica devices. Nevertheless, the variously managed network and individual printers are located in the same close proximities and are not yet optimizing TCO. It appears a gradual transition from individual devices to MFDs will continue into 2014 and beyond.

- The dispersed nature of CDOT field offices poses serious print challenges, particularly maintenance.
- The leadership has indicated they are pleased with a transition to MFDs. Support for a strategic MFD program seems universal, if cautious.
- Although they do not generally have fax functionality activated, scan to email and copy functions appear well used at CDOT.
- It's more common to see Konica in the field offices. Individual cost centers pay for their own devices. As a result, multiple business units are impacted by a team of just a few dozen people.
- Importantly, SAP prevents seamless integration with COFRS. They prefer billing direct to CDOT due to SAP implementation, so they routinely create a specific bill for CDOT.
- CDOT contracts for printer support, but the strategy for purchase versus lease by device has not been resolved. Leadership is interested in understanding the ROI of options, and need guidance on how many devices should CDOT have per user (what is the optimal ratio).
- Larger buildings (north Holly or Arkansas for example) seem to have more printers than they need. Many have desktop printers, and don't use secure print today.

3.3 CDPHE

Representatives from a majority of CDPHE divisions are in the midst of a clearly orchestrated, strategic shift to a pro-active MFDs strategy. Their bold initiative sought to optimize the user's printing experience while taking advantage of enterprise-scale cost savings. The immediate challenge was not offered as a choice, but rather an urgent call for TCO efficiencies in print management.

- CDPHE has roughly 1200 employees and 1000 onsite at the Cherry Creek headquarters. Prior to the program, each division effectively ran its own print environment. Seventy-five percent (75%) of employees had a device at their desk. To save energy, money & space, the sustainability group got involved, and after a bit of thought, the implementation was broken into four phases and approved.
- CDPHE selected RICOH as vendor based on cost 2.3 cents / page.
- Phase 1 - Vital Records, Disease Control & Administration (HR, Building Ops, OIT). These users have clearly been able to upgrade their business capabilities (eFax, scan to email, by working user by user to optimize color, scanning etc. In fact, Phase 1 quickly reduced in-scope devices from 307 to 140.
- Phase 2 – PSD, Lab & other teams reduced their device counts from 215 to 57. It was reported that some employees had concealed their printers with coats or documents during the inventory. Despite some negative feedback, Training took a bit of extra time for HIPAA customers.
- Phases 1 & 2 both had some challenges with eFax and AutoRoute. They were successful in instituting duplex printing and eliminating cover sheets while making ADA exceptions as needed.
- Phase 3 will involve remote sites including Grand Junction & Lowry.

CDPHE - MFP Project										
Summary Data by Phase										
Updated 01/01/2013										
Division	Before		After							
	# of Devices	Average Annual Cost	# of Devices	% Device Reduction	Average Annual Cost	Cost Savings	% Cost Savings	Space Savings	Annual Energy Savings	Annual Energy Cost Savings
Phase 1 Summary - Completed										
Admin All Bldgs:	72	\$34,666	30	-58%	\$21,458	(\$13,209)	-38%	3 Cubes	(3,150)	(\$252)
DCEED A3:	105	\$35,381	45	-57%	\$30,612	(\$4,769)	-13%	--	(4,500)	(\$360)
HFEMS C1:	17	\$15,324	3	-82%	\$7,804	(\$7,520)	-49%	--	(1,050)	(\$84)
CHEIS A1 and C2:	79	\$40,020	50	-37%	\$31,161	(\$8,859)	-22%	--	(2,175)	(\$174)
OEPR C2:	26	\$12,118	9	-65%	\$9,749	(\$2,369)	-20%	--	(1,500)	(\$120)
DEHS C1	8	\$5,548	3	-63%	\$5,402	(\$146)	-3%	--	(375)	(\$30)
Phase 1 Total:	307	\$143,057	140	-54%	\$106,186	(\$36,871)	-26%	3 Cubes	(12,750)	(\$1,020)
Phase 2 Summary - In-Progress										
PSD A4 & A5:	116	\$69,640	25	-78%	\$41,924	(\$27,716)	-40%	--	(6,375)	(\$510)
HFD A2:	38	\$23,765	10	-74%	\$17,976	(\$5,789)	-24%	2 Cubes	(2,100)	(\$168)
DCEED A2:	4	\$1,250	0	-100%	\$0	(\$1,250)	-100%	--	(300)	(\$24)
OIT A2:	9	\$8,218	2	-78%	\$5,152	(\$3,066)	-37%	--	(525)	(\$42)
Lab:	48	\$31,036	20	-58%	\$20,654	(\$10,382)	-33%	1 Cube	(2,100)	(\$168)
Phase 2 Total:	215	\$133,909	57	-73%	\$85,706	(\$48,203)	-36%	3 Cubes	(11,400)	(\$912)

3.4 DPA

After initial consultations, it appears less likely that DPA will initiate a program to consolidate stand-alone/individual printers. The prevailing culture may pose a constraint on progress regarding TCO as a primary decision criterion.

- Compile the data and compare with existing assessments and develop a range of employee to device ratios. (8-1 best practice vs 1-1 existing)

3.5 CDLE - UI

The team met with a variety of CDLE user representatives, including an acting Supervisor, an Appeals Analyst unit, an Administrative Assistant and several Document Managers.

- The teams reported printing a range of outputs. For example, an array of 14 forms with various attachments is generally printed from low volume HPs with an average speed of 17ppm. As a result, they see an unmet need for more efficient & secure printing. Reportedly, OIT permissions have slowed users trying to get their Lexmark devices to scan to network.
- Some admins have worked to optimize their print output for their needs. For example, using desktops for one page dismissals or reconsiderations while leveraging network printers for much longer hearing notices, subpoenas, and decisions.

- UI does have several faxes including RightFax. However, many electronic faxes are nonetheless printed and stored in physical files in Denver. Leadership would like to migrate to all electronic files; however, the unit is required by law to send notices, case files (by mail) to all interested parties plus hearing officers. Comingling of all the packages of printed files is a big concern for them when volume picks up.
- The Claims Processing manager indicated they typically send out nine forms on regular basis, with volumes reaching over 150 out day.
- The team is testing a new “dual” configuration where two staff together share one single printer. This approach can actually save up to 10 cents/page by upgrading the printing efficiency found in the best network printers.
- Claimant Services handles history, claimant and employers and their need for printed and notarized legal presences, liens & levies.
- UI reported problems with the unmanaged mix of HP, Lexmark & Dell. The variety of devices, including frequent model changes, & cartridge changes has been a drain on productivity & financial resources.

3.6 CDHS

Representatives from a majority of CDHS divisions provided essential feedback on their printing & document management needs. It is clear that the multiple organizations within CDHS are not currently collaborating to optimize their print cost structure.

- CDHS headquarters uses standard printing, duplex, stapling. Little faxing is done due to multiple divisions on the floor. Copying is also separate from fax and backup printer. Some concerns with confidentiality exist, although secure print appears to be working well. The Accounting area is seen as very paper intensive and there are some lines at copy machines.
- When the network is down, the scan function has caused the most complaints. They are looking for additional IT access to print to other devices.
- Very little traditional faxing is seen at CDHS. In fact, digital receipt and leaner processes for clearance are emerging this year. Scan to email is used for clearance process to document signatures while CSTAT remains a tremendous paper use. Binders for budget season drive volume for color copying and color printing.
- The Office of Early Childhood, Division of Child Care uses two Xerox MFDs. One for all prints. One for copy scan email. They also use it for outbound faxing to providers. Received faxes come in on the left side, while print jobs come out on the right and copy jobs use the middle tray.
- Ft Logan Mental Health uses 16 Xerox MFDs and another four for other agencies. They used to have four to five more Xerox. They appear to use most functions but a few devices are not activated for Fax due to the cost of phone lines. They are not yet using SecurePrint much, but this may just be a user training issue. Several areas have special software for dietary and pharmacy. Xerox helping here already. Supplies have inventory onsite, but some borrow and then replenish stock levels.
- The Mountview location currently uses seven Xerox MFDs. Importantly, for cost reasons, the school area in the building relies on copying instead of buying books. Individual printers are often used for personnel confidential prints. The staff actually fixes many devices themselves because they do not like dealing with Xerox on the phone, largely due to English language issues. Importantly, correctional officers who tend to move to a different desktop every day need to be set up individually on each device. Naming conventions appear confusing and network drops are not uncommon.
- The Administration team has Minolta devices onsite, and they are seen as fast and friendly. For this team, the other Xerox devices seemed to be more complex especially when PINs are required.
- Disability Determination Services uses eight MFDs. However, because they are on the SSA network, they are authorized to print but not scan/fax/email. Because they are 100% federally funded, they need to follow requirements for SSA.

4.0 Business Objectives

With the MFD Program, the state can better manage and reduce costs associated with output (printing, copying and faxing). This section describes the business objectives of this strategy, the focus of the strategy, as well as the impact on costs and processes.

4.1 Strategic Focus

In order to achieve results in a cost constrained environment, the state must find ways to control costs while maintaining and increasing quality of service. Per page costs are rising due to an increase in color consumption as well as lower utilization of printers. However, metrics aren't captured for either and thus they are not being monitored and controlled. The state has chosen to expand the MFD Program to begin controlling these costs associated with printing, copying, faxing and scanning. The central component of this operational strategy is the deployment of MFDs, including printers, copiers, fax machines and scanners.

4.2 Strategic Impact

According to The Gartner Group, most organizations can cut their printer fleet spending by 30 percent¹ while increasing the level of service provided to users with a strategic deployment of MFDs. A strategic deployment is not merely a replacement of existing devices with new machinery, but rather a statewide effort to use a mix of devices to reduce Total Cost of Ownership (TCO).

Additionally, in moving to an MFD Program, the state can establish a foundation to gain greater control over their imaging and document management resources while improving process efficiency. Specifically, by using output management software, the state would have a means of centralizing the management of their device infrastructures. Moreover, sophisticated reporting capabilities in this software would provide the state the information they need to optimize processes in the following areas:

- **Supply management.** By enabling centralized management of supplies like toner, rollers, and paper, remote reporting helps more precisely manage inventory levels while at the same time relieving department staff of time-consuming duties.
- **Flexible resource control.** Centralized management capabilities allow administrators a more precise ability to control which employees have access to specialized resources (e.g., color printing) as well as usage density (i.e., the number of users per device).
- **Device mix.** Timely usage reporting provides the information needed to optimize the mix and location of devices across the state.
- **Support.** These same remote reporting capabilities enable support staff to respond more quickly – even proactively – to device-related issues, improving uptime, maximizing the productivity of end users, and reducing help desk costs.

5.0 Recommendations

The following recommendations describe steps necessary to expand the MFD Program with the goal of reducing costs associated with printing, copying, faxing, and scanning. These recommendations are, where possible, mutually exclusive.

5.1 Expand Centralized Ownership for MFDs and Printers

Without a formal process for managing printer, copier, fax machine and scanner inventory, the existing environment of decentralized information, printer proliferation and poor configuration will continue. As part

¹ Adopt Strategies to Minimize Output Spending, Gartner, December 2005

of the MFD Program, we recommend the expansion of program to oversee the implementation of the strategy across all executive departments. We recommend that the program manager continue to work with OIT, vendors and agency representatives to create, implement and sustain the desired environment. The goal of the program manager is to right-size both the printer and multifunctional device fleet.

Additional duties of the program manager:

- Centralizing management of supplies (toner, rollers, paper)
- Collecting and monitoring metrics associated with device usage.
- Reporting utilization numbers to departments for use in financial and management decisions.
- Establishing remote device diagnostics to proactively identify issues such as hardware failures and low toner.
- Implementing audits to determine if policies are being followed.

5.2 Assess Current Network Based Device Asset Management Processes

Most printers and multifunctional devices currently in the inventory are not managed assets. Once purchased, they are left to the departments and to technical support to manage. They are treated as simple expenses and not as managed technology. This lack of active management is a key reason for the current printer proliferation and decentralization of information relating to printing.

Typically, Asset Management is defined as a process by which asset, user, and location information is captured, stored, analyzed, and distributed to enhance financial and management decisions. The MFD program includes a process for managing printers in the same fashion as other assets, beginning with an accurate inventory:

Step	Process	Key Benefit
1. Build Inventory	Perform automated and manual inventory Initial Inventory is one time event. Yearly audit	Lower cost through better Asset Management (AM) and less costly inventories
2. Maintain Inventory	Perpetual for Assets identified Develop and maintain AM database Discovery tool refreshes inventory Some manual entry Annual audit Contains contract data	Lower cost long-term to maintain inventory than conduct annually
3. Record Purchases/ Salvage	Database is updated for all assets defined	Understanding of inventory allows lower cost to be achieved with consolidated purchasing
4. Record Support Activity	Database is updated for all assets as defined Record Repair data Record Install/Move/Add/Change (IMAC) data	Understanding of support activity helps improve service and negotiate competitive SLAs
5. Analyze Reports on Assets	Forecast asset and support service needs Analyze TCO and asset performance	Lower cost achieved through software compliance, asset planning, purchasing Better planning information
6. Evaluate/Improve Processes	Assess performance Analyze people, process, and tech changes needed Continuous improvement	Better service and lower cost

5-1 Asset Management Process Steps

5.3 Formally Investigate Outsourcing Technical Support and Output Management

As part of a deployment of multifunctional devices, existing technical support should be consolidated. The continued deployment of non-standard MFD and printer devices may require new skill sets that are not easily acquired or maintained. Current OIT Service Desk staff and contractors are experienced in troubleshooting network and application issues, but struggle to achieve the same level of service across a variety of impacted devices. With multiple copier, scanner and fax machines, OIT technical staff does not have the required skills to support such a diverse set of devices.

MFD Program vendors offer technical support services. This support ranges from locally based technicians to permanently onsite vendor personnel. By bundling service with device purchases, vendors often offer discounts. An additional service offered by vendors is output management, for example, Xerox now provides software to remotely monitor and manage a printer/multifunctional fleet. Some even offer personnel. The addition of these personnel could serve to supplement existing output management efforts or replace them. In order to obtain the most competitive pricing, the MFD program conducts a formal investigation of the pricing options for devices and technical support every three years.

5.4 Standardize Printer Models and Consolidate Fleet

The state currently has over 80 individual printer models with a 2.6 employee to device ratio. These ratios are based on total of 9,300 devices spread across about 25,000 employees in the business case model. A standard list of approved personal & network printers, and MFD models should be created and communicated to all departments. This standard list should include a limited mix of single and multifunctional devices, monochrome (B&W) and color. This list should be maintained by the MFD Program

Manager and combined with approved TCO configuration standards to assist in configuration management. The list should be coordinated with the vendor providing the devices and the vendor should comply with maintaining the standards. Along with standardizing, the state should consolidate the Fleet into MFD's and locate fewer devices more centrally (where physically appropriate).

5.5 Default Suppression of Cover Pages & Duplex Printing

One of the more obvious methods to reduce costs is to suppress cover pages. These divider pages can be avoided if print jobs are released from a device on demand. This is often implemented in conjunction with password based secure printing.

Similarly, duplex printing should be the only standard across the state. Any other approach over consumes paper, utilizing only half of the printable surface at that cost.

5.6 Remove Aging Printers

Across the state, many printers have been discontinued by the vendors. Aging printers tend to fail more frequently and are increasingly difficult to integrate with technical requirements from integrated applications. Additionally, by keeping them in use, supply costs increase because departments must now maintain supplies for obsolete items. The state should use the MFD program to gradually replace obsolete devices.

OIT does not currently have a technology replacement strategy that applies to printers. Printers more than 3-5 years old should be cycled out of inventory and replaced with a more recent version or consolidated into a multifunction device. This recommendation is dependent on the existence of an accurate inventory.

5.7 Reduce Personal Printers

In an effort to standardize models and reduce the proliferation of printers, the state should consider communicating and enforcing a policy to reduce the number of personal printers. Personal printers are non-networked printers attached to a single PC and used only by an individual. Personal printers, as described in Table 5.2 Costs of Personal Printing vs. Workgroup Printing, typically have higher per page costs and are some of the least utilized devices in the hospital.

Importantly, we recommend the state include a waiver process for local, network printers similar to the IDS MFD waiver today. By requiring the business justification for the device the moment of requisition, IDS can best evaluate the need, and the device fleet options to best meet that need.

Industry Metrics: Average cost per page	Mono*	Color*
Personal Inkjet:	3.8-12.5 cents	9.6-12.9
Personal Laser	1.7-3.6	na
Workgroup monochrome laser	1.1 to 1.8	na
Workgroup color laser	1.1 to 2.4	7.5 to 11.3

5-2 Costs of Personal Printing vs. Workgroup Printing

*Price per page comparison for device cost and supplies such ink, toner and maintenance kit.

Personal printers should not be banned altogether. Certain categories of workers should be given the option of a personal printer due to the nature of their work. For example, exception categories might include: directors, telecommuters, disabled employees and isolated office workers. This recommendation is based on the selection of a device with secure printing. Secure printing allows personnel who need to print sensitive information to a centralized printer and have it wait until a unique code is entered or a card swiped before the device prints. The printing of sensitive information was the most common reason given for the implementation of personal printers.

As the following tables illustrate, differences in Page Count (Coverage) from 10% - 20% create a material opportunity to improve print efficiency and thus reduce overall operating costs. Samples of these percentages are included in the Appendix.

HP LaserJet Pro P1102w Printer	Cost	Cost / Page	HP HP LaserJet Enterprise P3015dn Printer	Cost	Cost / Page	HP LaserJet Enterprise 600 M602dn	Cost	Cost / Page
Cost of Product	\$ 129.00		Cost of Product	\$ 679.47		Cost of Product	\$ 1,087.76	
HP Care Pack (60 months) U6M40E	\$ 90.00		HP Care Pack (60 months) UP875E	\$ 239.20		HP Care Pack (60 months) HZ491E	\$ 575.20	
OIT Support (1 Install. Assume MPS)	\$ 150		OIT Support (1 Install. Assume MPS)	\$ 150		OIT Support (1 Install. Assume MPS)	\$ 150	
Finsher	\$ -		Finsher	\$ -		Finsher	\$ -	
USB Cord	\$ -		USB Cord	\$ -		USB Cord	\$ -	
Feature 2	\$ -		Feature 2	\$ -		Feature 2	\$ -	
Feature 3	\$ -		Feature 3	\$ -		Feature 3	\$ -	
Est Product & Support Cost	\$ 369		Est Product & Support Cost	\$ 1,069		Est Product & Support Cost	\$ 1,813	
Term - Months	60		Term - Months	60		Term - Months	60	
Monthly Term per month	\$ 6		Monthly Term per month	\$ 18		Monthly Term per month	\$ 30	
B&W Toner CE285A	\$ 66.92		B&W Toner CE255A	\$ 143.55		B&W Toner CE390A	\$ 169.74	
Page Count at 5%	1,600	\$ 0.0418	Page Count at 5%	6,000	\$ 0.0239	Page Count at 5%	10,000	\$ 0.0170
Page Count at 10%	800	\$ 0.0837	Page Count at 10%	3,000	\$ 0.0479	Page Count at 10%	5,000	\$ 0.0339
Page Count at 15%	600	\$ 0.1115	Page Count at 15%	2,250	\$ 0.0638	Page Count at 15%	3,750	\$ 0.0453
Page Count at 20%	400	\$ 0.1673	Page Count at 20%	1,500	\$ 0.0957	Page Count at 20%	2,500	\$ 0.0679
Est Pages Printed / Month	3,000		Est Pages Printed / Month	3,000		Est Pages Printed / Month	3,000	
Est. Monthly Toner Cost	\$ 251		Est. Monthly Toner Cost	\$ 144		Est. Monthly Toner Cost	\$ 102	
Est. Total Toner Cost	\$ 15,057		Est. Total Toner Cost	\$ 8,613		Est. Total Toner Cost	\$ 6,111	
Office Max Monthly Paper Cost	\$ 17	\$ 0.0057	Office Max Monthly Paper Cost	\$ 17	\$ 0.0057	Office Max Monthly Paper Cost	\$ 17	\$ 0.0057
Est. Total Paper Cost	\$ 1,026		Est. Total Paper Cost	\$ 1,026		Est. Total Paper Cost	\$ 1,026	
Est. Monthly Power Cost	\$ 6		Est. Monthly Power Cost	\$ 6		Est. Monthly Power Cost	\$ 6	
Est. Total Power Cost	\$ 360		Est. Total Power Cost	\$ 360		Est. Total Power Cost	\$ 360	
Est. TCO (Total Cost of Ownership)	\$ 16,812	\$ 280.20	Est. TCO (Total Cost of Ownership)	\$ 11,068	\$ 184.46	Est. TCO (Total Cost of Ownership)	\$ 9,310	\$ 155.16
Est. Cost / Click		0.093	Est. Cost / Click		0.061	Est. Cost / Click		0.052
Lexmark MS310dn	Cost	Cost / Page	Lexmark MS410dn	Cost	Cost / Page	Lexmark MS810dn	Cost	Cost / Page
Cost of Product	\$ 225.17		Cost of Product	\$ 360.87		Cost of Product	\$ 822.26	
Lexmark MS310DN Extended Warranty 235	\$ 203.15		Lexmark MS410 Extended Warranty 235E	\$ 203.15		Lexmark MS810 Extended Warranty 235E	\$ 313.65	
OIT Support (1 Install. Assume MPS)	\$ 150		OIT Support (1 Install. Assume MPS)	\$ 150		OIT Support (1 Install. Assume MPS)	\$ 150	
Finsher	\$ -		Finsher	\$ -		Finsher	\$ -	
USB Cord	\$ -		USB Cord	\$ -		USB Cord	\$ -	
Photo Conductor 30000 @ 39.17	\$ 235.02		Photo Conductor 30000 @ 39.17	\$ 235.02		Photo Conductor 100000 @ 64.89	\$ 116.80	
Feature 3	\$ -		Feature 3	\$ -		Feature 3	\$ -	
Est Product & Support Cost	\$ 813		Est Product & Support Cost	\$ 949		Est Product & Support Cost	\$ 1,403	
Term - Months	60		Term - Months	60		Term - Months	60	
Monthly Term per month	\$ 14		Monthly Term per month	\$ 16		Monthly Term per month	\$ 23	
B&W Toner 501H	\$ 132.43		B&W Toner 501X	\$ 199.32		B&W Toner 520HA	\$ 440.19	
Page Count at 5%	5,000	\$ 0.0399	Page Count at 5%	10,000	\$ 0.0190	Page Count at 5%	25,000	\$ 0.0176
Page Count at 10%	2,500	\$ 0.0797	Page Count at 10%	5,000	\$ 0.0390	Page Count at 10%	12,500	\$ 0.0352
Page Count at 15%	1,875	\$ 0.1063	Page Count at 15%	3,750	\$ 0.0531	Page Count at 15%	3,750	\$ 0.1174
Page Count at 20%	1,250	\$ 0.1595	Page Count at 20%	2,500	\$ 0.0797	Page Count at 20%	9,375	\$ 0.0470
Est Pages Printed / Month	3,000		Est Pages Printed / Month	3,000		Est Pages Printed / Month	3,000	
Est. Monthly Toner Cost	\$ 239		Est. Monthly Toner Cost	\$ 117		Est. Monthly Toner Cost	\$ 106	
Est. Total Toner Cost	\$ 14,351		Est. Total Toner Cost	\$ 7,020		Est. Total Toner Cost	\$ 6,339	
Office Max Monthly Paper Cost	\$ 17	\$ 0.0057	Office Max Monthly Paper Cost	\$ 17	\$ 0.0057	Office Max Monthly Paper Cost	\$ 17	\$ 0.0057
Est. Total Paper Cost	\$ 1,026		Est. Total Paper Cost	\$ 1,026		Est. Total Paper Cost	\$ 1,026	
Est. Monthly Power Cost	\$ 6		Est. Monthly Power Cost	\$ 6		Est. Monthly Power Cost	\$ 6	
Est. Total Power Cost	\$ 360		Est. Total Power Cost	\$ 360		Est. Total Power Cost	\$ 360	
Est. TCO (Total Cost of Ownership)	\$ 16,550	\$ 275.84	Est. TCO (Total Cost of Ownership)	\$ 9,355	\$ 155.92	Est. TCO (Total Cost of Ownership)	\$ 9,127	\$ 152.12
Est. Cost / Click		0.092	Est. Cost / Click		0.052	Est. Cost / Click		0.051
Kyocera FS1320D	Cost	Cost / Page	Kyocera FS-2100DN	Cost	Cost / Page	Kyocera FS-4200DN	Cost	Cost / Page
Cost of Product	\$ 412.00		Cost of Product	\$ 616.00		Cost of Product	\$ 908.00	
Additional 2 Year Warranty	\$ 258.00		Additional 2 Year Warranty	\$ 258.00		Additional 2 Year Warranty	\$ 318.00	
OIT Support (1 Install. Assume MPS)	\$ 150		OIT Support (1 Install. Assume MPS)	\$ 150		OIT Support (1 Install. Assume MPS)	\$ 150	
Finsher	\$ -		Finsher	\$ -		Finsher	\$ -	
USB Cord	\$ -		USB Cord	\$ -		USB Cord	\$ -	
Maintenance Kits- FS1320D	\$ 268.20		Maintenance Kit FS-2100DN	\$ 130.20		Maintenance Kit FS-4200DN	\$ 84.96	
Feature 3	\$ -		Feature 3	\$ -		Feature 3	\$ -	
Est Product & Support Cost	\$ 1,088		Est Product & Support Cost	\$ 1,154		Est Product & Support Cost	\$ 1,461	
Term - Months	60		Term - Months	60		Term - Months	60	
Monthly Term per month	\$ 18		Monthly Term per month	\$ 19		Monthly Term per month	\$ 24	
TONER FS13 DN	\$ 78.17		TONER FS-2100 DN	\$ 70.00		TONER FS-4200 DN	\$ 75.00	
Page Count at 5%	7,200	\$ 0.0109	Page Count at 5%	12,500	\$ 0.0056	Page Count at 5%	21,000	\$ 0.0036
Page Count at 10%	3,600	\$ 0.0217	Page Count at 10%	6,250	\$ 0.0112	Page Count at 10%	10,500	\$ 0.0071
Page Count at 15%	2,700	\$ 0.0290	Page Count at 15%	4,688	\$ 0.0149	Page Count at 15%	7,875	\$ 0.0095
Page Count at 20%	1,800	\$ 0.0434	Page Count at 20%	3,125	\$ 0.0224	Page Count at 20%	5,250	\$ 0.0143
Est Pages Printed / Month	3,000		Est Pages Printed / Month	3,000		Est Pages Printed / Month	3,000	
Est. Monthly Toner Cost	\$ 65		Est. Monthly Toner Cost	\$ 34		Est. Monthly Toner Cost	\$ 21	
Est. Total Toner Cost	\$ 3,909		Est. Total Toner Cost	\$ 2,016		Est. Total Toner Cost	\$ 1,286	
Office Max Monthly Paper Cost	\$ 17	\$ 0.0057	Office Max Monthly Paper Cost	\$ 17	\$ 0.0057	Office Max Monthly Paper Cost	\$ 17	\$ 0.0057
Est. Total Paper Cost	\$ 1,026		Est. Total Paper Cost	\$ 1,026		Est. Total Paper Cost	\$ 1,026	
Est. Monthly Power Cost	\$ 6		Est. Monthly Power Cost	\$ 6		Est. Monthly Power Cost	\$ 6	
Est. Total Power Cost	\$ 360		Est. Total Power Cost	\$ 360		Est. Total Power Cost	\$ 360	
Est. TCO (Total Cost of Ownership)	\$ 6,383	\$ 106.38	Est. TCO (Total Cost of Ownership)	\$ 4,556	\$ 75.94	Est. TCO (Total Cost of Ownership)	\$ 4,133	\$ 68.88
Est. Cost / Click		0.035	Est. Cost / Click		0.025	Est. Cost / Click		0.023

5-3 Costs of Current Personal & Network Printers, including Support, Power & Toner over 5 year Life

5.8 Communicate Locations of Alternative Devices

Multiple users indicated that they were not aware of printers, copiers, fax machines or scanners outside of their own department. With a move to centralized multifunctional devices, the sharing of these assets becomes all the more important. If one device is down for repair, disruption can be minimized if staff is aware of other printers and copiers in their vicinity. Possible methods for communicating locations to staff are:

- Device deployment map posted instructing staff as to the locations of all network printers, copiers, fax machines and scanners per floor.
- Development of an intranet site listing devices and their names, locations by building and floor.
- Add formal communication to assist staff in locating devices when the nearest device is under repair can be added to repair process.

5.9 Investigate Accounting Methods for Sharing Costs

This recommendation is dependent on the deployment of printers and multifunctional devices capable of tracking usage at the user level. To help create an atmosphere more conducive to sharing, the program could create a charge back solution allowing costs for usage and supplies associated with multifunctional devices to be allocated to an individual's department. By assigning costs based on usage, issues related to propriety (i.e. this is our printer, you cannot use it) will be less of a concern. This solution would require new accounts to standardize accounting for supplies. During month end, the charges associated with that account would be allocated back to department based on usage information received from the new devices.

Another benefit of this solution would be improved cost tracking. Costs related to device use would be tracked under standard accounts that could be analyzed using existing reporting tools. These reports could be developed and used for future analysis on usage and spending related to printing.

5.10 Track and Analyze Statistics on Printer Related Incident Reports

OIT indicated that they do not have the personnel or knowledge to thoroughly analyze their printer related incident reports which are approximately 5% of their monthly total. With close to 9,400 printers deployed and 900 printer calls a month, close to 10% of the printers per month are reporting an issue. In cases where multiple issues are being found with a printer, the only measurement the state uses to identify these is the personal knowledge of their printer technician. To more clearly understand the printer incidents, the state should leverage vendors to develop reports to assist in analyzing incident trends. Without a high level understanding of the issues relating to printers, OIT and DPA are unable to proactively resolve issues.

5.11 Perform Workflow Analysis on the Advantages Provided by Upgrading Devices

The true value of the multifunctional device and output management lies in the ability to combine the technology with process improvement. In particular, the scanning of documents for storage and electronic submission can significantly reduce paper usage and increased efficiency. Some costs can be reduced by managing printing (equipment) as infrastructure: device consolidation and print volume optimization are important goals. However, viewing printing (copy) applications only as basic infrastructure often misses larger opportunities for cost reduction that the state could achieve by eliminating or at least minimizing printing.

The phrase "the least expensive page is the page not printed" captures this thinking. Viewing of printing as infrastructure also misses the opportunity for improving customer communication, gaining a competitive

advantage, and driving revenue growth.² To achieve this value, the state should identify the processes that can most benefit by improvements in technology. For example, expanding the scope of the Google Docs implementation to include documents such as licenses and accreditation for individuals, invoices, purchase orders, etc. could significantly reduce the number of paper documents printed and stored.

5.12 Network Security

Having a standard platform of MFP devices, will allow us greater control on pre configurations to make sure that all MFP's are within the cyber security guidelines. The value and security we are trying to add, is primarily found in cutting down on security breaches to those not aware on how the device was setup.

Furthermore, the state needs to clearly define the network security management plan. Centralized firewall management authority and a documented process can help prevent unwanted changes to the current configuration of the network, limiting the chance that a change will impair functionality, hinder future changes or open a hole in network security.

Additionally, major firewall changes should be tested before going live. Failure to adequately test changes could lead to business disruption such as network latency issues or complete network outages. It's crucial to have a change reversion system in place, with failover and recovery plans, before an urgent need emerges. Consistent system snapshots can save time and money if a migration goes wrong or equipment fails unexpectedly.

User access logs can act as an elementary intrusion detection system, potentially revealing unauthorized access attempts from within or outside the network. Logs can also reveal creeping, incremental and unwanted changes to security policy.

Finally, over time, network security rules may not match security policy and unused rules may clog traffic and present a barrier to network changes. Out-of-step security can also present legal risks. It's important to regularly review firewall policy, update it as needed, and then check adherence to that policy by reviewing the firewall rules and configuration

5.13 Evaluate & Implement Managed Print Service (MPS) Agreements

We recommend the state vigorously evaluate using managed print services throughout the state. In general, Managed Print Services (MPS) involves managing hardcopy devices such as copiers, printers, multifunction devices, and fax machines in a unified fashion. This would enable the state to pro-actively & continuously monitor of all devices in the fleet for consumables (paper, ink etc) for appropriate reorder levels. Additional important aspects of MPS are management, billing, maintenance and optimization of the process throughout the contract life.

There are a wide variety of other services and software applications that can be added to this core to save on print costs. For example, discussions with the City of Aurora revealed they were able to save about 30% by moving all devices managed print services. MPS are facilitated by key software applications that fall into one of three categories:

- Print Management software to manage the volume and nature of print and authenticate users
- Device Management software to monitor and manage the print devices in an environment
- Discovery and Design Software to analyze and plan for the change required in implementing a Manage print services.

² The Electronic Data Systems Foundation: Criticality of Printed Information in the Financial Services Industry: 2005 Survey Results. Andrew Johnson, Managing Vice President, Gartner; Kumar Mehta, PhD, University of Connecticut

By streamlining the management of devices, the state would be able to order toner at wholesale cost using the states purchasing power. Furthermore, the state could order toner only when needed, so it is not stuck with closets full of old toner that is no longer being used (as is clearly the case today).

Some specific benefits available to organizations using a full MPS approach.

- Streamline device management for not just the MFD's but for network printers as well.
- Improve access and usability (mobile print, etc.)
- Prevent unauthorized device access or security breaches with badge authentication.
- Track printer usage across the state and meter read collection from one location.
- Provide accurate data to help improve workflow and streamline business processes.
- Enable IDS to be more of consultative service to state agencies.
- Provide an off-the shelf print eco-system solution service to state agencies.
- Ensure printer hardware standards are observed so OIT personnel can resolve print issues faster.
- Increase staff productivity because machines are not down as frequent.
- Require less staff time ordering consumables and placing service calls.
- Reduce the rate for printing across all state agencies.
- Streamline document distribution
- Reduce print related space and energy consumption by directing users to more efficient devices
- Eliminate need to manually track paper usage by device.
- Ensure proper disposition of devices (rather than landfill) by having the vendor appropriately repurpose and or recycle components.

Xerox GSA MPS Services & Conditions	Pricing & SLA Details
HP Supply and Break fix PPI Mono (Black & White)	\$0.012
HP Supply and Break fix PPI Color	\$0.098
Minimum % Assessed Volume	90%
Month base charge per device per month for Xerox MFDs.	\$5

5-4 Available Federal GSA MPS Services & Conditions (with Xerox)

As the table above illustrates, the black & white per image charge is \$0.012 (from Xerox GSA). By comparison, this is a direct savings of an additional 2 cents per click from the average efficient network printer or MFD (currently \$0.033 for Xerox). Saving 2 cents per click over the estimated 123M clicks in a year would save about \$2.4M in one year. Over 5 years, the total savings from an aggressive Managed Print Services approach would be \$12.3M.

5.14 Expand Implementation of Fax Server technology

Typically, organizations and departments with over 25 people faxing per day can benefit from implementing fax server technology and can see time and cost savings of up to 20%³. An analysis of the fax costs before and after the technology upgrade would be recommended to help understand the benefit of this technology.

Additionally, users could benefit from process improvements provided by the use of individual fax numbers and electronic faxing from the desktop. The amount of time taken to receive and send faxes could be reduced in some roles by providing the ability to receive electronic faxes and send faxes directly from the desktop. Workflow advantages of this technology include:

- Reduced time walking to fax machine
- Reduced time sifting through stacks of faxes
- Improved tracking ability for sent and received faxes

³ 20% estimated cost savings based on RightFax online cost calculator.

- Improved security

This solution is ideal for mid to large workgroups faxing on a daily basis that regularly use technology such as email. This solution is not necessarily recommended for use by staff, such as personnel, who do not regularly access email or a personal computer. If this solution is desired statewide, possible workflow changes could include the use of a common email address or dedicated Fax PC. To truly understand if this improvement is feasible in clinical settings, a process analysis of faxing is recommended.

5.15 Financial Impact

Substantial financial savings are available to the state regarding printers & related devices. In fact, as the following business case model illustrates, moving to a 6:1 Employee to shared device ratio (from the current 2.6:1), means over 5,300 printers could be retired over the next 7 years. At an average cost of \$350 to procure & install, this alone would result in over \$1.8M in savings over 7 years.

Just as significantly, the data collected enables us to estimate over 100M pages are printed each year by state employees. Based on survey data from CDE, CDLE and DPA, we can estimate that about 14% of the volume (or about 14M clicks) are coming from personal printers. With an average cost differential of \$0.07 per click for a personal printer page, versus a network printer, the potential exists to save over \$4.2M over 7 years by essentially moving to a standard mix of highly efficient shared devices.

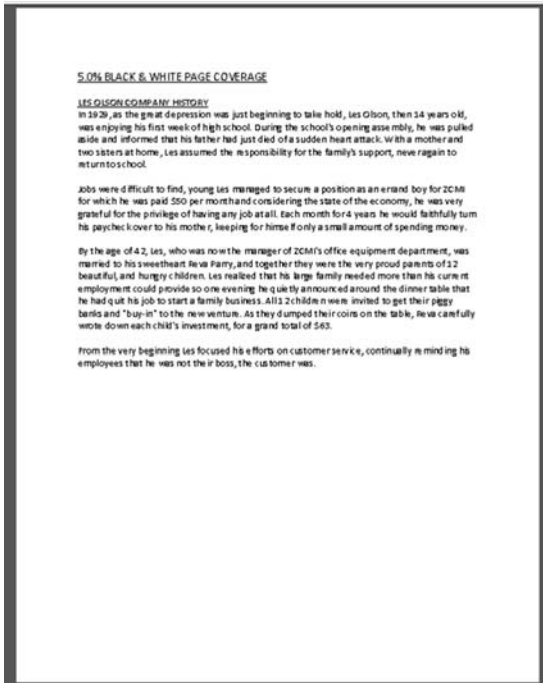
Additionally, leveraging a proactive Managed Print Services model would save an average of 2 cents per click over the estimated 123M clicks in a year. This would save an additional \$2.4M in 1 year and \$17.3M over 7 years.

In summary, over the course of the next 5 years, (even when holding print volumes steady) the combination of asset procurement savings, as well as the more efficient ink printing of network devices, the state stands to save over \$23.4M in unnecessary costs. Detailed inventory, usage and assumptions follow on the next page.

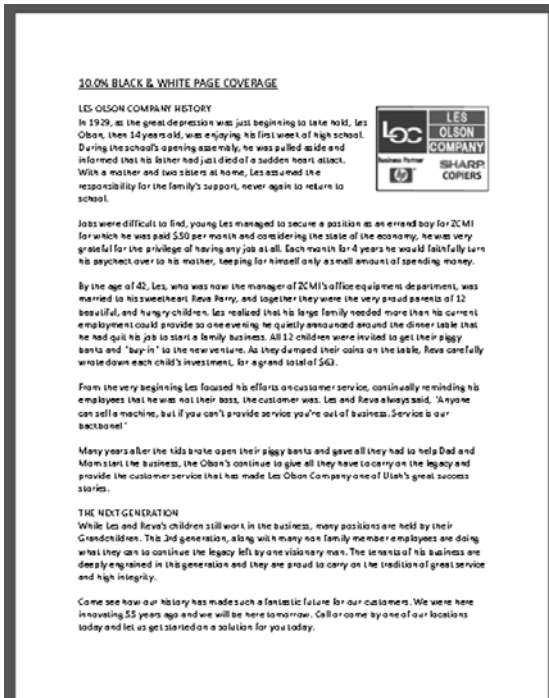
ANALYSIS		ASSUMPTION	Average of Depts w Detail	TOTAL	CDE	DPA	CODE	DOC	HCFP	HIST	TREAS	CDOT	DHS	CDPS	CPHE	GOV	COA	DOR	DOLA	DOIRA	DNR	DMVA
Surveys			1	5	-	1	3	1	-	-	-	1	9	4	1	-	-	-	-	-	-	-
Interviews			5	37	1	3	12	2	-	-	-	4	9	4	2	-	-	-	-	-	-	-
Print Assessments			1	6	25	1	2	1	-	-	-	4	9	4	2	-	-	-	-	-	-	1
#Personal Printers			348	6,268	95	282	1,181	3	3	19	2	1,480	1,156	799	105	14	92	112	16	76	802	9
PP Clicks Per Month			1,005	189,019	57,665	34,922	96,432	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PP C/M/ Device			1,005	1,005	2,307	368	342	-	-	-	-	175	391	48	52	45	17	542	29	47	99	12
#Network Printers			127	2,285	77	84	373	264	25	7	3	175	391	48	52	45	17	542	29	47	99	12
NP C/M/ Device			197,267	591,802	91,571	169,972	330,259	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NP C/M/ Device			1,366	1,366	1,189	2,023	885	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
#MFDs			22	499	18	30	13	140	11	14	2	53	13	33	35	4	8	12	-	6	17	12
#MFD Color			28	504	18	30	65	36	11	14	2	61	13	33	35	4	8	12	-	6	17	12
Monthly BW Clicks			310,205	2,481,638	120,129	121,411	338,697	1,744,925	88,375	52,784	15,203	114	88	33	-	20	20	44	4	20	38	38
Monthly Color Clicks			31,114	217,795	30,057	44,950	63,513	23,219	39,575	16,019	462	114	88	33	-	20	20	44	4	20	38	38
Total Printing Assets			612	9,371	120	210	733	1,621	39	40	7	1,769	1,648	875	192	83	137	710	49	149	966	33
Employee Count			5,346,880	37,428,272	3,232,380	3,915,660	9,184,656	20,939,100	88,375	52,784	15,203	114	88	33	-	20	20	44	4	20	38	38
BW Clicks per Emp		30000	1,347	24,252	601	357	1,163	5,980	363	131	30	2,959	4,991	1,557	1,270	1,100	276	1,207	151	547	1,411	148
Total Assets/Emps			4.128	28,893	5.378	10,968	7,897	3,496	243	403	507	0	4.991	1,557	1,270	1,100	276	1,207	151	547	1,411	148
Assets/Emp 14 Implies			2.2	2.6	5.0	1.7	1.6	3.7	9.3	3.3	4.3	1.7	3.0	1.8	6.6	13.3	2.0	1.7	3.1	3.7	1.5	4.5
#Assets Saved		4	337	6,063	150	89	291	1,498	91	7	8	740	1,248	389	318	275	69	302	38	137	353	37
#PP/Emp Ratio 1:6		6	102	4,912	100	121	442	124	(52)	22	(1)	1,029	400	486	(126)	(192)	68	408	11	12	603	(4)
#Assets Saved		6	510	5,229	20	60	194	998	61	22	5	4,953	832	280	212	183	46	201	24	25	91	233
#PP/Emp Ratio 1:8		8	168	3,092	75	45	145	749	45	16	4	370	624	195	159	138	35	151	19	68	176	19
#Assets Saved		8	414	6,340	45	165	588	872	(6)	24	3	1,399	1,024	680	33	(55)	103	559	30	81	780	15
Repl. Cost at 61 over 7Yr Cycle		\$ 5390	155,371	\$ 1,865,150	15,706	57,881	205,669	305,288	(2,231)	8,269	1,138	489,694	358,444	238,131	11,638	(19,075)	35,875	195,694	10,544	28,219	272,869	5,075
BW Clicks per Emp * # Emps				123,826,223																		
% Clicks PP of Total (CDE, DPA & CODE)				14%																		
#PP Clicks Savable		50%		8,598,278																		
Savings / PP Clicks Network				\$ 695,669																		
Click Value (1 Year)				\$ 4,239,680.73																		
Over 7 Years				\$ 29,678,171.1																		
Business Case Value - Asset & Click				\$ 6,104,831																		
Managed Print Services				123,826,223																		
BW Clicks per Emp * # Emps				\$ 0.02																		
Savings / Clicks No Managed Print				\$ 2,476,524.6																		
Over 1 Year				\$ 17,335,671																		
Over 7 Years				\$ 23,440,502																		
GRAND TOTAL				\$ 23,440,502																		

6.0 Appendix

6.1 5% Page Coverage



6.2 10% Page Coverage



6.3 20% Page Coverage

20.0% BLACK & WHITE PAGE COVERAGE

LES OLSON COMPANY HISTORY

In 1929, as the great depression was just beginning to take hold, Les Olson, then 14 years old, was enjoying his first week of high school. During the school's opening assembly, he was just outside and informed that his father had just died of a sudden heart attack. With a mother and two sisters at home, Les assumed the responsibility for the family's support, never again to return to school.

Jobs were difficult to find, young Les managed to secure a position as an errand boy for ZCM for which he was paid \$50 per month and commencing the start of the following year, he was very grateful for the privilege of having any job to do. Each month for 4 years he would return by turn his paycheck over to his mother, keeping for himself only a small amount of pocket money.

By the age of 18, Les, who was now the manager of ZCM's office equipment department, was married to his sweetheart Neve Neve, and together they were the very proud parents of 12 beautiful and happy children. It is realized that his biggest family needed more than his current employment could provide so one evening he quickly announced around the dinner table that he had quit his job to start a family business. All 12 children were invited to get their "piggy banks" and "lay-in" to the new venture, as they dumped their coins on the table, Neve calmly wrote down each child's investment, for a grand total of \$65.

From the very beginning Les focused his efforts on customer service, continually reminding his employees that the way to their boss, the customer was, Les and Neve always said, "Anytime as the machine, but if you can't provide service you're out of business. Service is our backbone!"

Many years after the kids had to open their piggy banks and give all they had to help Dad and Mom start the business, the Olsons continue to give all they have to carry on the legacy and provide the customer service that has made Les Olson Company one of Utah's great success stories.

THE NEXT GENERATION

While Les and Neve's children still work in the business, many positions are held by their grandchildren. This 2nd generation, along with many non-family members and employees are doing what they can to continue the legacy left by one visionary man. The tenants of his business are deeply engrained in this generation and they are proud to carry on the tradition of great service and high integrity.

Come see how our history has made such a fantastic future for our customers. We were here in November 55 years ago and we will be here some more. Call or come by one of our showrooms today and let us get started on a solution for you today.

We appreciate your business!

6.4 40% Page Coverage

40.0% BLACK & WHITE PAGE COVERAGE

Welcome to our Open House!



We appreciate your business!