One Driver to Rule Them All: The Universal Print Driver

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Abstract

With the need for multiple printer brands, models, and devices within an organization to handle an assortment of printing needs, firms have become accustomed to supporting dozens (if not hundreds) of printer drivers as a necessary evil. This multi-driver environment results in higher costs, the negative aspects of which may have previously lacked consideration. With the arrival of the Universal Print Driver, this is an area where improvements can and must be made.

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Introduction

Hewlett-Packard recently announced the second iteration of its Universal Print Driver (UPD), which is focused on streamlining the print processes and operations within an organization by employing a single driver to handle all supported HP-branded devices. The benefits of a product like this appeared obvious. The necessary investment for UPD is minimal—the driver is essentially free, it requires little training, and it can be up and running within an organization in a matter of weeks. InfoTrends believed that the "return" on such an investment would be substantial for help desks and IT departments as well as end-users, offering a consistent printing experience across a multitude of devices. As this white paper will show, users are in fact experiencing a variety of benefits from this type of driver.

The Challenge with Today's Printing Environments

Handling print processes within a user organization would almost be a non-issue if the printing environment consisted of multiple instances of the same device on the network. Unfortunately, this is typically not the case. A company's printer fleet usually consists of multiple brands and models, which can make management, support, and use of print devices challenging. One aspect that makes this printing scenario so difficult is the existence of multiple print drivers.

The existence of multiple print drivers within an organization can bring a number of challenges for IT personnel, the help desk, the end-users, and the organization as a whole. First of all, multiple drivers mean multiple interfaces. Different driver interfaces may offer different options (or at least place the option tabs and buttons in different places) and different formats, which make the printing process more challenging for the knowledge worker. In addition to causing extra pain points for the end-user, this typically results

in extra calls to IT and help desk personnel. This is just one of the many challenges associated with a multiple driver environment that we will examine in this whitepaper. Other challenges, such as those associated with the installation and management of devices, can have an even greater impact on an organization in terms of incurred costs and lost productivity.

The answer to these challenges, then, would be the implementation of a driver aimed at becoming the "platform" driver for an organization—one that can manage most, if not all, of the print devices within an organization (depending on the brand of the driver and the brand of the printer.) This type of driver would ease the installation and management of print devices for IT and help desk personnel and make the print process less intrusive for end-users.

One such product that is currently available on the market is Hewlett-Packard's (HP's) Universal Print Driver (UPD). HP released the second iteration of its Universal Print Driver in July 2006. To better understand these drivers and their benefits, InfoTrends conducted interviews with UPD users. Although the stories were certainly not identical, the participants did articulate a number of consistent benefits provided by UPD. Most respondents did not conduct a formal ROI analysis prior to making the move to UPD, and some were still in the implementation phase or had not reached full deployment, but all could

> ### Group Health Cooperative's Implementation of UPD
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> Group Health is a consumer-governed, nonprofit healthcare system coordinates healthcare and coverage. The organization has about 50 locations and spread throughout these locations are 500 Microsoft servers, of which 50 are print servers.
>
> Group Health has approximately 4,000 printers, with 2500 on a print queue, to support approximately 10,000 users. The rest are what the organization refers to as "rogue" printers (attached to a desktop). The interviewee estimated that approximately 85% - 90% of its print environment was HP, with some Xerox and Oki devices making up the remainder. The organization uses 40-50 print drivers and is hoping that its implementation of UPD will eventually bring that number under 10.
>
> Group Health is currently in the testing phase of its UPD implementation, which means that the benefits expressed in this sidebar are expected and have not been fully experienced. Its primary motivation for implementing UPD was the fact that the existing drivers were causing a serious network load problem. Preliminary testing showed this problem as fixable through UPD. Additional drivers for implementation were:
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> - A reduction in the amount of testing necessary for the certification of printers
> - The enablement of on-the-fly printer configuration by field engineers without the waiting time traditionally associated with MSS creating the queue
>
> Group Health believes that UPD will start showing a return on investment (ROI) within 12-18 months of implementation. Some expected benefits include:
>
> - A 50% - 75% drop in administrator time handling tasks such as recreating print queues due to printer changes (i.e. added trays), etc.
> - While field engineers will be handling the same amount of work (configuration), they will be able to do it faster. For example, swapping a printer will require 1 minute on a Web site rather than 5 - 10 minutes on the phone with MSS to get the driver updated.
> - Having a universal set of tabs will make it easier for end-users to find features, cutting down on calls to the help desk.

speak to the benefits they obtained or expected from the product. InfoTrends took those benefits and translated them into sample formulas. In some cases, we used exact numbers provided by the participants. In other cases, we based our findings on industry averages.

Minimal Investment, Multiple Benefits: What Is a Universal Driver?

In a nutshell, a universal driver is a single driver that can be used for the purpose of pushing print jobs out to multiple printers on the network. As mentioned in the introduction, there are a number of challenges associated with the multiple driver environment that is typically found in many of today's organizations. Functioning like a traditional print driver from the end-user's perspective, a universal driver can connect

users to multiple shared printers on the network. In contrast, multiple drivers often provide different interfaces and require installation and testing.

Upon being installed on a user's computer, a universal driver should be able to automatically discover devices. In cases where the user does not know what he or she will be printing to (i.e. a constantly-changing environment), the universal driver should initiate a search. The end-user can then work from his/her applications with the knowledge that he/she can access any device based on individual printer needs (e.g. the need for color or larger paper formats) and permissions without the hassle of installing new drivers for each device. In addition to streamlining the process and eliminating the need for multiple driver installations on a user's system, this decreases user confusion due to inconsistent driver interfaces, which in turn can cut down on calls to the help desk and the time it takes to submit and complete a print job.

Once up and running within an organization, HP's Universal Print Driver offers benefits to end-users as well as the organization as a whole, particularly IT personnel and help desk resources. In addition to a decrease in help desk calls and troubleshooting associated with guiding users through processes such as driver installation, printer discovery, or simply dealing with the fact that the print options offered in one driver are not offered in another, HP's Universal Print Driver can lend itself to helping IT staff by being able to intuitively list out the print devices within an organization. This creates the opportunity for an enhanced view of an entire organization's printing environment, where the IT staff can logically group printers together for ease of management.

In addition to offering centralized access to a multitude of devices within an organization through one driver, UPD also enables more centralized management of these devices. Through the use of UPD and additional HP capabilities such as Managed Print Lists (MPLs) and Managed Print Policies (MPPs), IT can gain more control over the printing processes within an organization. Staff members can assign control properties to a specific device or to features within a device to decrease unnecessary use of features like color, which is a major concern for many organizations.

A Multiple Driver Environment Can Hurt a Bottom Line

InfoTrends' 2006 publication entitled *Understanding the Return Achieved through More Effective Output Management* discussed why it is costly for print to be an afterthought. Unsurprising, then, is the connection between managing a multitude of print drivers and overall print costs. By assessing the resource requirements necessary to support these multiple driver environments, we can understand the detrimental effects they have on an organization's bottom line. Later in this report, we engage in a quantitative analysis utilizing information obtained by speaking with organizations that have deployed UPD.

More Drivers: More Servers

Although our interviewees as a whole indicated that print servers were deployed on a per-site basis, it is our belief that in many cases a multiple driver environment will require additional print servers, primarily depending on the complexity and scope of the print queues handled by each server. Needless to say, the computing power and network traffic that can be correlated to these additional servers can be a significant cost trap.

In the document mentioned above, InfoTrends also noted that "the load on the servers used for other applications (e.g. SAP), which can impact performance of those solutions…directly translates into user satisfaction and performance." Among smaller and less established organizations, we may see file and print services residing on the same physical machine. Moreover, organizations of all sizes have been known to consolidate server usage, running several services and back-end applications on the same box. Whether or not the dedicated print server is the norm in your organization, it seems likely that the presence of a multiple driver environment would increase the load on all machines providing print services.

More Drivers: More Management

Server load and network traffic management are not the only two obstacles posed by the multi-driver environment—upgrades and migrations must be accounted for as well. With additional print drivers, heavier IT management will be required to set up as well as maintain the new hardware. Each of these tasks will require a trained field technician's time.

A multi-driver environment will require more careful auditing of the installation and replacement process. Any missed step, server, printer, or driver can lead to a severe corporate headache, one that all of us have had the unfortunate luck of experiencing. Based on our interviews, most organizations have standard operating procedures at some level of complexity for installing, certifying, and maintaining printers and print drivers. Nonetheless, this is a sizable job when dealing in multiples, and the skill sets required are certainly not easy on the pocket.

A construction management company's Implementation of UPD

This global, for-profit program and construction management company employs approximately 20,000 employees worldwide. The company's headquarters employs 1,500 individuals and is currently in the testing phase of Universal Print Driver, with limited implementation.

At its HQ, the company has not fully quantified its printing environment in terms of raw numbers, but estimates that the population is 90% - 95% HP, with some Canon models as well. The site supports 10 - 20 print drivers and expects that UPD will address 90% - 95% of those post-implementation. Additionally, the site supports 3 print servers and is not anticipating a change in that due to UPD.

- The primary drivers behind the decision to implement UPD were:
- A reduction in help desk calls (particularly centered on setting up local printers)

Convenience – some printers within the organization have multiple queues with specific drivers set up. The company was hoping to make this process easier.

The implementation within the organization was done in a phased, roll-out style on a site-by-site basis. The organization anticipates that it will take about one week per building.

In terms of benefit expectations, the company pointed to user assistance as one area. The company expects that UPD will assist users in locating printer names, drivers, and devices. In addition to helping end-users with their printing, this benefit will impact the help desk as well. The company estimates that 20% of its total monthly call ticket volume is currently related to resolving printer or driver issues. Within that 20%, the company estimates a 15 minute per-call duration. It is expecting a 5% drop in calls to the help desk per month.

IT is where the organization expects the most dramatic impact, however. At this time, the company's headquarters averages approximately 16 man-hours per month installing, certifying, maintaining, and deploying print drivers. After implementation, the company is expecting a 50% reduction in this amount.

Perhaps more important are the shortcomings that a multiple driver environment can have on downtime and system failure. In light of the recent importance placed on "disaster recovery" and "continuing operations," the ability to easily migrate servers, printers, and drivers is increasing in value. Without a proper standard operating procedure and auditing system in place, steps are likely to be missed. Nonetheless, even with a comprehensive process that is understood and followed by all involved parties, dealing with more than just a few drivers is likely to bring IT staff members to their knees, especially in a disaster recovery situation when other priorities may be higher on the list.

Brigham Young University (BYU)
and the Universal Print Driver

Brigham Young University—encompassing 33,000 students, 6,000 - 7,000 employees, and 70 locations across the campus—sought out the Universal Print Driver with a different perspective than most other UPD user organizations. While most businesses regard printing as a cost center, it is a revenue center for this institution. This revenue is used to support other IT-related programs, such as computer labs and wireless network access. For example, increasing the use of color can increase customer satisfaction while also bringing in more money.

BYU was introduced to UPD at an HP conference and immediately saw how the technology could address the following pressing issues within the university:

- *Expansion*: The existing printing environment was made up of two servers that supported queues for each printer, with each queue attached to an associated driver. UPD simplified the environment.
- *Improved performance and flexibility for students*: Requiring separate drivers for each printer meant that changes made in the environment (i.e. a printer gets replaced) required some user adjustment. UPD enables BYU to more rapidly introduce new printers and services.
- *Lowered support burden*: With a large number of drivers being supported, IT spent considerable time making changes to environments. Funds and time traditionally associated with printing-related administrative tasks were reallocated to other areas.

According to Scott Hunt, Product Line Manager at BYU, "UPD met many of the objectives that [BYU] sought out, allowing us to expand easily, providing our customers and consumers with a greater flexibility and reducing our support costs." In addition, Brigham Young saw additional "unexpected" benefits:

- There has been a 40% - 50% decrease in the amount of time that it took the help desk to resolve printer problems.
- IT personnel were spending 5-8 man hours per week installing, certifying, and maintaining print drivers. Now, once they have configured UPD, they need no more configurations. Therefore, that has become a non-issue.
- Adding a new site took approximately 16 hours before UPD. That time has decreased by approximately 20% - 30% since implementation.
- Time spent resolving driver issues has dropped from 10 - 15 hours a week to nothing.

Overall operator assistance time has dropped 5% - 10% as users are not required to be directed to specific print locations, but can instead pick up their jobs at any station.

More Drivers: More Client Support

Finally, we place emphasis on the confusion (or even chaos) that a multiple driver environment can cause with end-users. Ideally, printing should be handled in the most automated manner possible, virtually eliminating any explicit knowledge about underlying physical printing environments. Even with a growing number of printing options (i.e. duplexing, multi-page (e.g. 4-up, 8-up) printing, color options), the services should be specifiable in the same manner irrespective of what printer is being used.

As we said, a multiple driver environment brings complexity into the knowledge workers' environment, and although many of these obstacles have already been discussed above, they deserve summarization and further treatment from the end-user's perspective:

- Installation, certification, and maintenance of multiple print drivers across an extensive computing environment is a daunting task, especially in the presence of temporary consultants and mobile users, two categories of end-users that are growing substantially in the modern corporate world. Migration, upgrades, downtime, and disaster recovery can become work-halting issues for end-users.

- With every print driver comes a print interface. In addition to the obstacles of installing and maintaining the software (matching end-users with all the drivers they will require, again noting that this is highly complex for mobile users and consultants), there is the potential for confusion among users, especially those that utilize several printers or must select advanced printing options.

- Multiple drivers (and transitively, the multiple print servers that support them) require more CPU cycles and network traffic than a universal driver approach. End-users may see a reduction in the performance of unrelated services, given that these services reside and operate on the same physical machines as the print servers.

The Benefits of Using a Universal Print Driver

UPD Benefit Snapshot…

…For IT

- ‣ 20-30% less time adding new sites
- ‣ 5-10% drop in necessary operator assistance time
- ‣ Elimination of expensive print servers (which cost between $300/month and $2900/month to maintain)
- ‣ 75% decrease in man power to integrate printers
- ‣ 50% reduction in man-hours per month installing, certifying, maintaining and deploying print drivers
- ‣ 50-75% drop in administrator time

…For the Help Desk

- ‣ 40-50% drop in time spent resolving printer problems
- ‣ 5% drop in monthly call ticket volume

…For the End-User

- ‣ End-users have more control over their print
- ‣ With UPD lowering support needs, organizations can more easily start to offer more print facilities by adding more printers to lower the wait time for their users

Clearly, there are several salient drawbacks to employing a multiple print driver environment. Due to changing business conditions and resource availability, however, it may not be possible to utilize one print driver across the whole enterprise. Supporting specialty or legacy printers or having a multi-vendor environment may require maintaining an assortment of print drivers. Nevertheless, our interviews with HP customers indicated that organizations were able to go from supporting dozens of printer drivers down to less than a handful, primarily to support legacy or specialty printers.

We extract several drivers for UPD that were mentioned by most (if not all) our respondents:

- Extensibility is a key issue for our interviewees. Increased demand for black & white as well as color printing requires additional printers and print servers, and migrating to a universal print driver allows for easier installation of new printers as well as software (i.e. print queues) on the back-end. Moreover, end-users require significantly less support to maintain the new and replacement systems.

- Flexibility is another often-mentioned driver. Mobile users, temporary users, and static users have different printing needs. A UPD approach can drastically reduce the complexity of printing on their respective systems. In the case of downed or malfunctioning systems, users have greater flexibility in choosing alternative printing options on-the-fly.

- Decreased support costs were mentioned by virtually every interviewee. These support costs include installation, certification, and maintenance of hardware, print queues, drivers, and related software as well as end-user support. In general, UPD tends to reduce back- and front-end IT management costs of printing. In particular, we noted substantially easier installation, printer discovery, and centralized monitoring from our respondents.

- Finally, end-user ease-of-use was important for a number of the study participants. End-users are given one driver interface with UPD; views are the same across locations and printers, cutting down on the need for IT or help desk intervention. Printer-specific features such as duplexing present themselves when available: UPD communicates with a device to determine its properties and capabilities, presenting these in the user-friendly universal driver UI. Then, to some degree, this driver reflects decreased IT support costs and increased system flexibility as well.

These benefits can be quantified through a series of metrics and formulas that can be used to calculate specific returns for deploying HP's UPD. These metrics are not all-inclusive, however, and should only be used as guides to likely sources of payback from deploying the product. Where notable, we point out potential sources of skewing in these formulas.

Reducing the Number of Print Servers

In our first example, an international, Fortune 500 company (referred to as Company A) has deployed the Universal Print Driver in multiple regions, spanning locations and facilities. It obtained incredible payback simply by reducing the number of print servers necessary within the environment.

Table 1: Company A Statistics

Users supported	55,000
Calculated monthly costs to administer and maintain print servers	$2,900.00
Number of print servers managed before UPD	120
Number of print servers managed after UPD	0

Although Company A completely eliminated its 120 print servers, let's assume for the sake of argument that it is only possible to reduce the number of print servers by 75% after migrating to UPD. The Table below reveals the dramatic effect that a reduction in the number of print servers can have on a company's bottom line. InfoTrends argues that this is one positive consequence of moving away from a multi-driver environment.

Table 2: Reducing the Number of Print Servers – Company A

Reducing the Number of Print Servers	= Number of print servers supported * Percentage that could be reduced through UPD implementation * Cost per year for server and maintenance (including resources for managing)
Example	(120 print servers * 75% reduction * $2,900)/months * 12 months/year = **$3,132,000 in annual savings for Company A**

This example utilizes print server purchase and maintenance costs, which may be overstated for other organizations. As a result, actual returns may be lower; we stress the importance of obtaining accurate cost data in quantitative analyses such as these. At the same time, we note that due to potentially reduced server load and network traffic, Company A may experience greater efficiency than revealed by this metric.

Reducing the IT Cost to Support Printing

We also consider general IT costs to support printing issues that are not resolved by the help desk and are escalated to IT, illustrating with another real example from the interviewees within what will hereinafter be referred to as Company B.

Table 3: Company B Statistics

Users supported	10,000
Full-time field engineers employed	22
Expected reduction in print-related tickets after UPD	50-75%
Time spent working on print-related issues	20%

Table 4: Reducing the IT Cost to Support Printing – Company B

Reducing the IT Cost to Support Printing	= Number of FTEs * [Annual number of tickets opened for print-related issues * Time spent per ticket * Percentage drop after deploying UPD / Annual FTE working hours] **OR** * [Percentage of time resolving print-related issues * Percentage drop after deploying UPD] * Average fully-burdened pay for Field Engineers / IT
Example	22 FTEs * 20% print-related issues * 62.5% reduction * $80,875 annual salary for General IT / Field Engineer[1] = **$222,406 in annual savings for Company B** **5,500 hours in annual IT Support savings[2]**

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1 Average Total Compensation for General IT Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

2 Based on 2,000-hour annual employment.

Help Desk Workload Reduction

For those issues that do not escalate to IT support, another benefit mentioned by our interviewees was reduced IT/help desk support needs, and one method for computing the ROI of such an improvement follows. In this case, we illustrate with data obtained from another interview which we call Company C.

Table 5: Company C Statistics

Users supported	1,500
Number of full-time help desk employees	10
Estimated time spent on print-related issues	20%
Estimated drop in print-related issues after UPD	10%

For the purposes of this example, we estimate IT support salaries based on national averages to compute the financial return.

Table 6: Reducing the Help Desk Demands – Company C

Reducing the Help Desk Demands	= [Number of FTEs on Help Desk * Percentage of time spent resolving print-related calls * Percentage drop after deploying UPD] **OR** [Number of print-related tickets per year * Average time spent per ticket * Reduction in the number of tickets / Annual FTE working hours] * Average fully-burdened pay for IT Help Desk
Example	10 FTEs * 20% print-related issues * 10% reduction * $62,000 annual salary for IT Help Desk[3] = **$12,400 in annual savings for Company C** **400 hours in annual Help Desk savings[4]**

Keep in mind that these are the financial savings of reducing help desk demands. Assuming that man-hours could be put to better use, the opportunity cost of focusing on print issues is much higher than the salaries. In larger environments, this could also translate into a reduction in the number of staff members required to support the help desk.

Adding New Sites and Printers

Our next example examines the savings of a universal print driver approach with respect to extensibility, specifically the costs associated with adding new sites and printers. We illustrate this with another example from the UPD interviews, which we call Company D (Company D is an amalgam of two interviewed organizations.)

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3 Average Total Compensation for Help Desk Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

4 Based on 2,000-hour annual employment.

Table 7: Company D Statistics

Users supported	40,000
Time spent adding new sites	16 hours/month
Reduction in effort after UPD	25%
Time spent adding/changing printers	15 minutes
Number of printer changes per day	20[5]
Reduction in time spent adding/changing printers	67%

For this particular example, the organization found that it was spending a considerable amount of time having field technicians add options like a duplexer or even new printers. Each time, the technician would call IT to ask for a new queue to be established. Having a universal print driver that automatically scans for these changes completely eliminates the time the technician would spend waiting for the queue to be established before testing it.

Table 8: Reducing the Resource Needs for Adding New Sites and Printers – Company D

Reducing the Resource Needs for Adding New Sites and Printers	= (Annual hours spent adding new sites [Number of new sites * Time] * Percentage drop after deploying UPD) + (Annual hours spent adding/changing printers * Percentage drop after deploying UPD) * Average fully-burdened pay for Field Engineers / IT / Annual FTE working hours
Example	[(16 hours/month adding sites * 12 months * 25% reduction) + (0.25 hours * 20 changes/day * 250 workdays[6] * 67% reduction)] * $80,875 annual salary for General IT / Field Engineer[7] / 2,000 hours per year = **$35,807 in annual savings for Company D** **886 hours in annual IT Support savings**

Reducing the Costs for Certifying and Deploying Print Drivers

Finally, we focus on the costs associated with certifying and deploying print drivers, an area where a universal print driver environment can drastically reduce the budgetary investments needed. This example is illustrated with the organization known as Company E.

Table 9: Company E Statistics

Users supported	40,000
Time spent certifying and deploying print drivers	5-8 hours/week
Reduction in effort after UPD	99%

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5 Normalized for 40,000 users supported.

6 Approximation from Salary.com.

7 Average Total Compensation for General IT Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

Table 10: Reducing the Cost for Certifying and Deploying Print Drivers – Company E

Reducing the Cost for Certifying and Deploying Print Drivers	= [Time spent certifying and deploying each driver * Number of drivers per year * Percentage drop after deploying UPD] **OR** [Time spent certifying and deploying print drivers each year * Percentage drop after deploying UPD] * Average fully-burdened pay for Field Engineers / IT / Annual FTE working hours
Example	6.5 average hours/week * 50 weeks/year[8] * 99% reduction * $80,875 annual salary for General IT / Field Engineer[9] / 2,000 hours per year= **$13,011 in annual savings for Company E** **322 hours in annual IT Support savings**

As mentioned earlier, these formulas should serve as guides only. Actual resource loads, salaries, and working hour figures should be determined by each reader. Using a combination of metrics (including those above), one can construct a "Total Benefit Related to UPD" metric that essentially functions as a summation of all others.

Total Benefit Related to UPD

To give a full picture of the benefits of UPD deployment, we normalize several of the previously illustrated metrics for a 10,000-user organization. Specifically, we look at the benefits resolved from adding new printers, certifying and deploying drivers across the enterprise, and IT resources saved through lowered help desk and IT support needs.

Our example company supports 10,000 users across several geographies. The following is a quick review of some of the current resources utilized:

- On average, IT spends 15 minutes adding and replacing printers or implementing new features (duplexing, etc). They estimate that 5 of these jobs are completed each day.

- On average, IT also spends 1.25 - 2 hours/week10 certifying and deploying print drivers.

- 22 full-time IT support engineers are employed by the organization, spending 20% of their time on print-related tickets.

- Finally, 6711 full-time help desk technicians are employed, and they too spend 20% of their time on print-related issues.

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8 Approximation.

9 Average Total Compensation for General IT Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

10 Normalized to 10,000 users supported.

11 Normalized to 10,000 users supported.

The example company anticipates the following improvements through implementation of UPD:

- A 67% reduction in time adding and replacing printers as well as introducing new features (duplexing, etc.)

- A 99% reduction in time spent certifying and deploying print drivers

- A 50% - 75% reduction in IT support needs for print-related issues

- A 10% reduction in help desk needs for print-related issues

Then, using the aforementioned formulas and the above example data, the calculations in the Table below show the annual return on an investment in UPD.

Table 11: Total Annual Benefits Related to UPD for 10,000 Supported Users – Example Company

Reducing the Resource Needs for Adding New Printers	= 0.25 hours * 5 changes/day * 250 workdays[12] * 67% reduction * $80,875 salary[13] / 2,000 hours **= $8,466** **= 209 hours in annual IT Support savings**
Reducing the Cost for Certifying and Deploying Print Drivers	=1.75 average hours/week * 50 weeks/year * 99% reduction * $80,875 salary[14] / 2,000 hours **= $3,502** **= 87 hours in annual IT Support savings**
Reducing the Help Desk Demands	= 67 FTEs * 20% print-related issues * 10% reduction * $62,000 salary[15] **= $83,080** **= 2,680 hours in annual Help Desk savings[16]**
Reducing the IT Cost to Support Printing	= 22 FTEs * 20% print-related issues * 62.5% reduction * $80,875 salary[17] **= $222,406** **= 5,500 hours in annual IT Support savings[18]**
Total Annual Benefits Related to UPD = $8,466 + $3,502 + $83,080 + $222,406 **= $317,454** **= 2,680 hour in annual Help Desk savings +** **5,796 hours in annual IT Support savings**	

Once again, we reiterate that these are strictly financial metrics. The ability to provide a more streamlined and extensible environment goes beyond cost savings to include the opportunity cost of those savings. Specifically:

- A field technician who does not need to focus on print-related issues may exert more valuable effort elsewhere

- A multi-purpose server that is no longer bogged down by print-related work will likely exhibit better performance

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12 Approximation from Salary.com

13 Average Total Compensation for General IT Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

14 Average Total Compensation for General IT Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

15 Average Total Compensation for Help Desk Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

16 Based on 2,000-hour annual employment.

17 Average Total Compensation for General IT Staff across U.S. InformationWeek's 2007 National IT salary Survey. April 2006.

18 Based on 2,000-hour annual employment.

- A knowledge worker that can easily print using an assortment of options, and can focus on the task at hand irrespective of location

These qualitative benefits illustrate that there are certainly limits to what the financial metrics above can capture. Notwithstanding these shortcomings, the benefits of moving toward a Universal Print Driver strategy should be evident.

Hewlett-Packard's Universal Print Driver

Hewlett-Packard's Universal Print Driver (UPD) is essentially a single driver replacement for all of HP's PCL5 and Postscript printers. The company announced version 2.0 this year, and consumers can download it free of charge at www.hp.com/go/upd. The application can be installed on any Windows PC (Microsoft Windows 2000, XP, XP Professional x64, and 2003 Server, Microsoft Windows Terminal Services and Citrix Presentation Server Environments) and can enable users to print to most HP printing devices with HP PCL5 or HP postscript level 2 and 3 emulation.

HP's UPD provides the following features and functionality for the end-user:

- A consistent driver and interface for all HP printing devices, eliminating the need to become familiar with and install multiple drivers for multiple machines on one PC

- End-user access to advanced printer options, including n-up printing, job storage, input trays, output bins, two-sided printing, stapling, and watermark printing.

- Automatic discovery of new devices without the need for install of a new driver (optional)

- Real-time Status Notification Pop-ups (SNPs) to give users the necessary information to resolve printer issues without the need for help desk or IT involvement

- Mobile printing options to access devices from a conference room, satellite office, or home office through the same driver (optional)

Additionally, the driver provides a specific tool called the Managed Printing Administrator for IT departments to better manage print environments and provide more efficient printing operations for their organizations. Managed Printer Lists (MPLs) can be created by IT personnel through provided setup tools or imported from Web Jetadmin or Novell print shares. These lists provide a centralized and hierarchal view of a user organization's printing environment for ease of management. Managed Print Policies (MPPs) improve security and control by empowering IT staff with the tools to manage end-user access to certain devices or features within those devices (such as color or advanced finishing features). Additional features such as HTML views for finding printers within lists (including maps, see the Figure below) further enhance management processes, which in turn can reduce the time and costs now associated with printer management tasks such as installation or troubleshooting and extending out to other processes such as training and/or device certification.

Figure 1: Custom-Built UPD Mapping Example

Looking forward, HP will be releasing UPD version 3.0 in November 2006. The features that will be the focus of this new release are:

- Active Directory Services Integration

- The ability to control color access by user, device, application, and time of day

- PCL language 6 support

- Improved color feature support (will support color themes)

Buying What It Sells: HP's Own Case Study

The customer interviews that InfoTrends conducted to understand the benefits associated with UPD included discussions with Hewlett-Packard itself. HP had implemented UPD within its own organization to assist with its internal processes. This type of implementation speaks to HP's confidence in its product, and InfoTrends believes the benefits experienced by HP tell a valuable story of how a Universal Print Driver can help an organization gain a better hold of its printing environment.

InfoTrends conducted two interviews with HP personnel on the subject of its UPD implementation—one with an individual based in the Americas and one with an individual based in the EMEA (Europe/Middle East/Africa) region. As an overall organization, HP has 137,000 employees split between the Americas, EMEA, and Asia-Pacific and has installed 60,000 instances of UPD worldwide.

Devices Currently Supported By HP's UPD version 2.0

HP LaserJet/Color LaserJet series

1150, 1160, 1200, 1300, 1320, 2100, 2200, 2300, 24x0, 2500, 1550, 2605, 3000, 301x, 3020, 3030, 3052AiO, 3050AiO, 3055AiO, 3200, 3300, 3300mfp, 3390AiO, 3392AiO, 3700, 3800, 4000, 4050, 4100, 4100mfp, 4200, 4240, 4250, 4300, 4350, 4345mfp, 4500, 4550, 4600, 4610, 4650, 4700, 4730mfp, 5000, 5100, 5200, 5500, 5550, 8000, 8150, 8150mfp, 9000, 9000mfp, 9040, 9040mfp, 9050, 9050mfp, 9055mfp, 9065mfp, 9500, and 9500mfp

HP Business Inkjet/OfficeJet series

2250, 2280, 2300, 2500CM, 2600, 2800, 3000, and 9100 (all-in-one).

Additionally, through the postscript emulation driver, UPD can support:

HP Color LaserJet 2500 and 2550 series printers, 2800 series all-in-ones, and HP Business Inkjet 2800 series printers

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Hewlett-Packard America

A major driver for HP America in implementing UPD had to do with its existing printer situation. Prior to implementing UPD, HP was supporting roughly 120 UNIX and Windows print servers, which the company had deemed unnecessary and expensive. In fact, HP did some due diligence in relation to figuring out the true cost of these servers and came to the conclusion that these servers were costing approximately $2,900 a month per server including maintenance, power, support, and other associated costs. HP believed that eliminating these costs was a critical business issue and would result in substantial cost savings. An additional driver for the implementation was ease-of-use. The company wanted to put the responsibility of handling printing processes on the end-user to take some of the burden off of help desk and IT personnel.

In some cases, the implementation was done as a phased process. In other cases, the company did an implementation on an entire site. Decisions were made on a site-by-site basis and as UPD was being deployed throughout, HP discovered that—even in phased approaches—the implementation would "filter like a bug," according to James McMorris, Project Manager for the Direct Print implementation at HP. "By the time we got to another building, we noticed that more users were using it than what we thought," McMorris stated. In terms of training, little was needed. One step in the implementation was to send out communications to end-users that included directions on how to install the driver and links to areas such as frequently asked questions to aid in the process. This basically eliminated the need for end-user training. In fact, the only training necessary was for the help desk to handle UPD-specific calls. Overall, HP had planned on each America-based location to take about 4 weeks to fully deploy. Implementation was easier than expected, however, and ended up taking roughly 2 weeks.

In terms of benefits, the elimination of the existing Windows and UNIX print servers has resulted in the expected cost savings. The company has eliminated all of the Windows and UNIX print servers that it was using, which has resulted in a savings of approximately $348,000 a month. The ease-of-use issue has also been addressed. In fact, McMorris claims that UPD is "so easy to use, a 5 year-old could do it." End-users now have more control over their print jobs. For example, if a job is stuck, users can delete it from their desktop without the need for additional assistance. Furthermore, the elimination of the print server has had a positive effect on the IT department within HP. Before UPD, a specific number of individuals (8-12 in the Americas, 4-5 in EMEA, and 2-3 in APJ) were spending between 35% and 45% of their time installing print servers and performing other server-oriented tasks. Now that these print servers have been eliminated, these tasks are not necessary.

Hewlett-Packard EMEA

Within HP's EMEA offices, the company estimates that it supports approximately 10,000 print devices and 40,000 users. Prior to the implementation of UPD, the EMEA region was supporting 300 print drivers. As was the case in the Americas, the need for multiple print servers was causing a major cost burden for the organization. Prior to the implementation of UPD, HP was relying on the use of 105 print servers that were deemed unnecessary.

The drivers for implementing UPD within HP EMEA were similar to those that drove the American branches to consider implementation, including the reduction of servers for cost-cutting purposes and ease-of-use due to the responsibility for handling print processes falling on the end-user. Additionally, EMEA was interested in supporting and maintaining just one driver within the organization. HP EMEA

was attempting to subscribe to a "new printing philosophy," according to Christine Jacoy, Project Manager for Direct Print at HP EMEA. "In the past," claims Jacoy, "the server involvement was necessary to be able to print. With the new concept of printing, the print servers should no longer be part of the printing process."

The implementation plan for EMEA was to have sites fully deployed in 4 weeks per site across 45 countries. The implementations were to be done parallel to one another, however, resulting in a total implementation time of 4 weeks.

In terms of benefits, EMEA was able to reduce the number of necessary print servers from 105 to 3. This results in a cost savings for HP EMEA of $295,800 per month. In addition, Jacoy stated that the company has seen a decrease in the number of help desk calls, largely due to the ease-of-use improvements that the company was seeking. States Jacoy, "In France, for example, we had around 450 print-related support calls in a 3-month timeframe before we started implementing UPD. After implementing UPD, we can speak to a decrease of 20% in the following 3 months."

Conclusion

With the need for multiple printer brands, models, and devices within an organization to handle an assortment of printing needs, organizations have become accustomed to supporting dozens, if not hundreds, of printer drivers as a necessary evil. As this document has emphasized, this multi-driver environment results in higher costs, which can be accounted for in per-server costs, unnecessary resource expenditures, losses in productivity, and end-user discontent. The negative aspects of such an environment, and the converse benefits of a single-driver environment, may have previously lacked consideration. With the arrival of the Universal Print Driver, however, this is an area where improvements can and need to be made.

The effect that a UPD can have on return and investment is difficult to ignore. The driver carries with it an essentially non-existent upfront investment. It should require little or no training, and it also requires little in the way of resources or implementation time to get the driver up and running within an organization. UPD, however, can assist organizations with improving their businesses by cutting costs, improving printer management processes for IT, and making the printing process much less intrusive for end-users.

HP, in particular, appears to understand this need, and the attention that the company has paid to this area is encouraging. The organization is already on its second version of the UPD product and has plans for a November 2006 release of a third iteration. Through the interviews conducted for this report, it should be clear that this driver pays off for organizations in a number of business-critical areas.