Institutions and organizations providing networked printing facilities have to cope with dramatically increased volumes and rapidly changing technology. Despite predictions of a paperless society, document output has in fact increased and in most cases the rising costs of paper and consumables, and increasing demands for printing services, are not being matched by increased budget allocations. These budgetary constraints make it imperative to reduce wastage and control costs. Printing services providers are therefore increasingly requiring full or partial cost recovery on a user-pays basis.

The key benefits of using Pharos Uniprint are:
- Recovery of printing consumables costs.
- Elimination of unnecessary and wasted printing.
- Recovery of funds for re-allocation to network technology upgrades.
- Improved measurement of print volumes enabling the optimal deployment of print resources and improved management of printing resources.

**Product Overview**

Pharos Uniprint is the market leading application for the accounting and charge back of network printing. Uniprint is a client-server application that controls and monitors printing resources over virtually any local area network (LAN) or to remote TCP/IP based printers. Whether a print job is sent from a desktop work station or a wireless laptop, the Uniprint software system intercepts the job and then tracks, monitors, measures, routes, and optionally charges for network printing. It has its own accounting database, which can interface to third party accounting and authentication systems.

The Uniprint system is robust, scalable, and customizable and has been developed to take advantage of the state-of-the-art nature and high levels of security and reliability of the Microsoft® SQL Server database. It also utilizes the high-performance file and print services of the robust, multi-purpose Microsoft Windows network operating system.

Uniprint provides an easy-to-learn scripting language that allows you to modify almost every aspect of Uniprint operation, from customized messages to intelligent document routing. It also provides a powerful system of plug-ins that allows you to customize its operation in countless ways. These plug-ins can be written in most languages or using the built-in scripting feature.

Uniprint also features an External Device Interface (EDI), which allows external components such as network terminals and cash conversion machines to be used with the Pharos system.
Key Features

Uniprint Feature Summary

- Operates over a local or wide area network
- Provides excellent scalability using server architecture and by supporting an unlimited number of printers
- Supports most printer types
- Provides a sophisticated SQL accounting database that can manage users in debit, credit, or limit modes
- Integrates easily into the environment by connecting to external data sources such as authentication services, billing systems, and existing document management and accounting systems
- Accounts accurately for print jobs and minimizes processing time and delay to the user
- Supports a wide range of card manufacturers and technologies including magnetic cards, smart cards, and online billing systems
- Uses easy scripting language and plug-ins to allow modification of almost every aspect of how the software works from customized messages to intelligent document routing
- Detects and records the presence of color printing. Other detected job attributes include paper size, simplex/duplex, application the job was printed from, document name and job owner
- Where multiple copies are printed, the number of pages in the original document and the number of copies printed are recorded
- Prices print jobs according to document attribute, destination device, volume, or any other variable or combination
- Confirms print cost and debits user before printing proceeds, and provides ability to secure a print job by configuring a password protect option
- Charges print jobs to specific users, charge codes and/or cost centers in accordance with any charging policy
- Purges unprinted jobs automatically after a specified time
- Prevents wrong job types being sent to a printer
- Controls access to color printing
- Supports both an invisible or ‘direct’ mode where jobs are charged for as they are delivered automatically to the best printer, and a ‘spooled’ mode, where jobs are held until a user walks to the printer to release it.
- Produces a range of standard reports using Seagate Crystal Reports, which provides opportunity to create customized reports
- Centralizes management to administer all facilities
- Uses a popup service to collect additional information from users at time of print and provide customized feedback to users on their client workstations
- Has an optional External Device Interface (EDI) which can enable interface with network terminals, iMFPS and tracking of some fax and scan transactions

Architecture

Uniprint server-based technology works over most common third party networks. The advanced inter-networking features of Windows Vista Business/Windows 2003 Server allow Uniprint to be installed on a Windows server in Novell, UNIX and other environments.
Uniprint supports operation in a clustered environment on Windows 2003 (although some manual steps are required to install the Pharos Database and services in a clustered environment). SQL Server (which the Pharos Database is based on) is a “cluster-aware” application. Clustering Uniprint services allows for redundancy strategies—should one “node” of the cluster server fail, the other will automatically take up the tasks it was performing.

The system can be configured for any number of users, printers, networks, and operating systems. The system also uses the standard print services provided by UNIX, Windows and Macintosh. On printers that support it, Uniprint talks directly to the printer’s engine. This is done using Internet standard protocols that are supported by the widest range of printers. In busy environments, services can be loaded on separate or multiple machines. Multiple Uniprint servers can share a single SQL Server database, thereby decreasing the cost of installing large Uniprint sites and increasing centralized control. This separation of services also allows network topology issues such as heavy traffic between a Uniprint print server and the workstations and print processing components for which it is responsible. Positioning print servers at strategic places ensures that network traffic remains localized. The system also supports operation in a system where the spooling load is spread across several disks (by configuring printers to spool to different locations), thereby reducing the I/O load for the Windows system disk.

The Pharos Uniprint system has been designed for a “hostile” environment and high levels of security and reliability are guaranteed by the Microsoft SQL Server database. Uniprint uses AES encryption with 128-bit keys. Where Uniprint components communicate via HTTP, communications can be secured with SSL.

Centralized Management
Pharos Administrator
When Pharos Uniprint is implemented, users print jobs to printers that are shared from a server rather than from a local machine. All functionality is managed using a comprehensive administration application called Pharos Administrator, which runs on any Windows Vista/2003/XP SP2 server or workstation machine on the network. A suitably privileged administrator is able to administer all facilities for all Uniprint servers, including printers and spool queues, from a single central point. From their own desktop, an administrator can add new printers as the network expands and define charging rates, or adjust charging rates as expenses change. The administrator can also change the routing of print jobs so that if a printer is offline, out of service, or adjustments are necessary for any reason, jobs can be routed elsewhere.

An administrator can:
- Modify any system configuration option on any server from the central administrator, and then cause all servers and Pharos Stations to reconfigure themselves on-the-fly.
- Maintain any user account
- Restrict access to certain facilities to users or groups of users.
- Specify messages to be presented to the user when they begin interacting with a Pharos Station

In addition, an administrator can configure or change the setup of printers and charging. Using Pharos Administrator, an administrator can:
• Define variable printing charges for each printer group set up on the system. Options include no charge, a per use or a per page charge. Charges can also be levied according to any finishing or printing options selected, such as duplexing, stapling, collation, rotation.

• Allow/disallow certain types of jobs to/from any printer. Examples include disallowing Ledger jobs from a US Letter only printer, or disallowing Postscript jobs from a PCL or Text only printer (helps stop users from using the wrong drivers), or permitting only duplex jobs to go to a duplex printer. Uniprint will select only compatible printers for print jobs.

• Allow/disallow color printing on a per-User Group basis, and optionally allow color printing only from an approved set of applications.

• Grant volume discounts (or extra charges) for printing to a given group or individual user.

• De-mangle print job information that has been modified when passing between different protocols. For example, Macintosh print jobs often arrive with brackets and spaces around the user name. TCP-based print jobs often arrive with brackets and/or IP addresses. Uniprint has a powerful system for cleaning up this information before using it for display or billing.

• Uniprint allows the administrator to charge extra/less for the use of printer features (job attributes). For example, the administrator can provide a discount for duplex printing, or charge extra for stapling.

Pharos Remote
A cut-down version of the Pharos Administrator application is available in Pharos Remote. The Pharos Remote web application allows users other than the Administrator to control aspects of printing and user administration. Pharos Remote is installed on a central web server and can be accessed from any PC with a web browser. Typically, it will be available in every computer lab or print area, if only for use by that area’s supervisor, and it is possible that Pharos Remote may be used in place of Pharos Stations. Different access levels provide different functionality within Pharos Remote:

• **User**
  Users can view/delete/print their own jobs, access their own file details and see/print a statement of their account transactions if the Administrator allows it.

• **Proctor**
  The Proctor has all User rights, and in addition can view all print jobs, print and delete jobs, get job properties, purge the queue, access layouts and move jobs.

• **Cashier/Administrator**
  The Cashier/Administrator can complete Proctor functions, create users, access details on a user, disable and enable users, credit/debit a user, print a statement.

Spooled and Direct Printing
Uniprint allows you to provide dynamic intelligent routing of print jobs, based on all information available to Uniprint about the job. Uniprint does not allow users to print directly to a physical printer. The system must be configured to use either spooled or direct printing.

• **Spooled** means jobs are held awaiting release by a user at a Pharos Station. This option suits a public facility such as a business center, a library or an educational institution.

• **Direct** means jobs are billed immediately to a user and sent to the best printer without being held. This option is suited to business or other "trusted" environments where users work on personal PCs and requires users to have Pharos internal accounts.
With spooled printing, access to physical printers is further controlled by a print release application called a Pharos Station. In a spooled printing scenario, a user at a workstation prints their job to the appropriate Spool Queue and then proceeds to the Pharos Station which controls the printer to which they wish to send their print job. The Spool Queue holds the print job until the user releases it. At the Pharos Station, the user selects their job from the list presented and opts to print or delete. If users must pay in advance for their printing, payment is required at the Pharos Station. Once paid for, the print job is directed to the relevant printer.

Printers and Spool Queues are set up in Pharos Administrator. Printers are the physical printers on the site. Spool Queues (or logical printers) are funnels that gather print jobs and direct them to the physical printers. Spool Queues are mapped to physical printers and may serve a single physical printer or distribute jobs to several printers. Print flow rules are configured in accordance with the needs of a site.

Using spool queues allows the Uniprint system to:
- Send print jobs to a particular printer irrespective of where they originate. For example, you can configure multiple Spool Queues to map to a single printer. In a different scenario, a single Spool Queue could map to all physical printers. If this setup is combined with print release stations, a user can print their document in one part of the site and release it at a printer on a distant part of the site.
- Move print jobs to different printers according to particular attributes. For example, if the Spool Queue is mapped to several printers, a large job can be sent to the fastest printer in the grouping, or to the printer most capable of handling a large document.
- Move print jobs to bypass printers that are broken or jammed.

A non-interrupted print process is called direct printing. There are no Pharos Stations required. As soon as a user prints a document at a workstation, the print job is routed to a suitable printer. If required, payment in a direct printing environment is on account (advance or arrears). Both print processes can operate simultaneously on a site.

**Print Release Options**

*Pharos Stations*

The Pharos Station application runs on a dedicated PC. The station can be configured as a Print Station where users can select the jobs they wish to release for printing.

A Print Station screen shows the print jobs that have been sent to the Pharos Station Spool Queues by users at user workstations. At the Pharos Print Station users locate their job(s) and arrange payment. The Station then releases the job(s) to a printer. Jobs do not print unless this validation process is successful. Uniprint automatically deletes print jobs that are left in the system past a specified interval.

The application can also be configured as an Account Station where users can perform functions their account such as viewing transactions or transferring funds.

Depending on configuration a Pharos Station allows users to:
- Select multiple print jobs at the Pharos Station and then press **Delete** or **Print**. All of the selected jobs are printed/deleted in a single operation.
• Select and operate on many jobs at once at the Pharos Station. If any of the jobs are protected, then the user will be prompted for a password before the operation completes.
• Create a new account or modify existing account details

The station can be used in either an authenticated and non-authenticated environment. It can be configured to require identification using logon and ID or card swipe.

Uniprint automatically generates a Pharos Station Manual tailored to the site. This manual is one to five pages long, suitable for display beside the Pharos Station itself.

**Network Terminals**

A network terminal can be used in place of a Pharos Station. A Network Terminal is a small terminal with a keypad and LCD display which connects to the network directly or via a web-based External Device Interface (depending on the type of terminal). Pharos offers the Omega PS 150 terminal solution, as well as compatibility with terminals from other vendors.

A Network Terminal has its own firmware and, depending on the terminal, accompanying software, which can be configured to manage printers, billing and some account maintenance functions. A Network Terminal is used instead of a dedicated PC Pharos Station.

**Integrated MFPs**

Pharos Systems has partnered with leading printer manufacturers Canon, Hewlett-Packard and Lexmark to offer Integrated Multi-Function Printer (iMFP) solutions for releasing print jobs. Uniprint software is installed directly onto a supported printer, which communicates with the Uniprint system via the Pharos External Device Interface, allowing users to release print jobs from the printer itself using the printer’s built-in touch screen and user interface. Users can log on using the touch screen or an attached card reader (magnetic card swipe or proximity card).

Pharos iMFP solutions also offer integrated control of the copying, fax and email facilities supported by most MFPs.

**Cost Recovery Options**

**Internal Billing**

The billing process is the basis of the Pharos internal accounting system. The billing process can be used to:

• Charge users for the resources and services they use.
• Track the resources and services used, without requiring payment.

Uniprint’s integrated accounting system enables cost recovery on a user pays basis. Charging may be varied by department or individual user using a configurable set of rate schedules. User charges can be recovered by way of:

• Debit to a user or cost center account (either prepaid or credit).
• Deduction from a balance recorded on a prepaid card, with provided support for a large range of card systems. A large number are supported now with more being developed constantly.
• Charging to a client, matter number or work code, or any combination.
Before printing a job, the system displays the credit balance of the relevant account and the cost of each print request. The system will not allow a print to proceed if there are insufficient funds available in a user account or if the user has exceeded a pre-determined credit limit.

A print cost statement is available upon request. This details the originator's name, the name of the document being printed, the number of pages and the cost.

Users may originate print requests from a variety of terminals and applications on the network (e.g. they may originate various documents in a Macintosh word processor, a UNIX spreadsheet application and a Microsoft Windows PowerPoint presentation). Uniprint holds these until the user wants to print them. The user is then able to view all of their own pending print jobs and specify those they want to print. Alternatively, in an authenticated environment using an online billing system, Uniprint can bill for the job and immediately forward it to a printer on arrival.

**Third Party Billing**

Uniprint also allows billing to third parties, which is different from third-party charging to a cost center (a function of the Pharos internal accounting system). Third party billing uses gateways to access external accounting systems such as Diebold or Blackboard online billing systems. However, information about charging to cost centers can also be exported for use in third party billing directly from other accounts such as clients in a law firm.

**Print Job Identification**

Uniprint provides a number of means of tagging or identifying print jobs depending on the purpose.

**Page Counter**

The Pharos page counter works behind the scenes to:

- Interrogate the print job to find out what printing techniques the user has requested (referred to as job attributes), such as collating, duplexing, paper size and page description language. The page counter also detects if the job is in color or black and white.
- Verify that the type of job being forwarded to a printer is valid for that printer e.g. an administrator may designate a printer as a US Letter and Postscript printer only. In that case, any PCL jobs sent to that printer will be refused (including jobs that were moved there using the Pharos Remote drag-drop operation).

The Page Counter does not require interface with the user.

**Popup Service**

Uniprint supports tagging print jobs with extra information under Windows and Macintosh (OS X 10.4 and later). A window pops up at the user’s workstation to allow the collection of extra information about a print job. This data collection takes place immediately after the job is spooled from the client workstation. Examples of extra data that can be collected are:

- **Document Name** - the system-generated name of the document can be changed and the user-selected name will be displayed at the Pharos Station and Pharos Remote
- **Owner Name** - the system-generated name of the owner can be changed - and the user-selected name will be displayed at the Pharos Station and Pharos Remote
• **Password** - a password can be entered against a print job. This print job is then considered protected, and can only be printed or deleted by a user who can provide the correct user name and password at the Pharos Station

• **Cost Code** - a charge code or client/matter number and work and project code to charge the job to. Users can select from recently selected cost centers, type in their cost center details or search cost centers.

The system is completely configurable and additional data entry fields can be included.

Uniprint can also display cost information about print jobs at the user workstation as they are printed. Messages can inform the user of the cost of the job, and optionally require them to accept the cost before the job can be released.

**Job Attribute Detection**
Detailed job attributes are recorded for all print jobs tracked by Uniprint, which can be viewed when transaction data is exported.

For print jobs, all information gathered by the page counter is tracked, including job owner, paper size, document name, simplex/duplex, color/black and white, application used to print, number of copies printed and number of pages in the original.

**Integration with Document Management Systems**
There is also the facility to allow Uniprint to integrate with existing document management systems such as iManage and Hummingbird. In this situation the Popup service works behind the scenes to access information such as client and matter numbers from the document management system database and automatically sends the information to the Pharos database for charging or other purposes.

**Banner Pages**
Uniprint provides two configurable techniques for creating banner pages. In one, the administrator creates a document containing keywords that are replaced when the banner is printed with the print job. An example of this is included on the CD. In the other, the administrator can write a program to generate banner pages on the fly. This banner program is passed the full details of the print job on the command line.

**Mobile and Wireless Printing**
Print tracking and accounting options can be extended to cover laptop users. Laptop use is proliferating thanks to improving quality, falling prices and the increasing technology-driven user expectations of convenient and immediate communications. May 2005 saw laptop sales surpass those of desktop PCs for the first time, a trend that is unlikely to reverse\(^1\). Users require services that allow them to maximize the advantages of this itinerant technology.

Uniprint mobile printing functionality means laptop users no longer have to waste time searching for the right drivers for the printer they want to use. Instead, a user surfs to an advertised website to select one or more pre-built and configured automated printer packages. The packages self-install without reference to the user, and update automatically until the user no longer wants them. Mobile printing is supported on Windows 2000, Windows XP, Windows 2003 and Windows Vista.

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1. *Laptops Outsell Desktops for First Time*, Greg Sandoval, BusinessWeek Online, June 4, 2005
Each printer package contains the necessary printer driver, spool queue, auto-installer and other optional modules such as Pharos Popups and Pharos Notify. The Administrator builds the packages and makes them available on a deployment website. Pharos provides a set of optional tools to help create this web presence.

You may choose to use the Pharos default deployment website, or you can use your own IT site. You can use your own web development tools to display a simple list of text links or use the Pharos Print Map Builder to create a graphic for assisting users in selecting the appropriate printer package.

**Pharos Print Map Builder**
The Pharos Print Map Builder is an optional tool that allows you to create a detailed web map from a pre-existing image, such as a site or building layout, and then modify the image with hotspots and supplementary graphics. You can also use Pharos Print Map builder to create your own simple layout diagram using basic shapes and text. The level of complexity you choose is entirely up to you.

**Reporting**
Uniprint utilizes the power of SQL Server to provide full audit trail and reporting options. It enables reporting of usage statistics by student, department/faculty and so on. System administrators can track print volumes for each printer on the network, thus enabling them to optimize their deployment for maximum efficiency.

Uniprint reporting is flexible and user definable. System administrators can configure customized reports to meet their own needs.

Various reports are available in the following categories:
- Charging
- Copying
- Distributions
- Miscellaneous
- Printing
- PrintOp
- Transactions
- Users

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2 A licensed copy of Seagate Crystal Reports is required to customize reports.
Sample Report – User Details

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Usage Count</th>
<th>Usage Total</th>
<th>Amount Charged</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer</td>
<td>200 Sessions, 4,311 Minutes</td>
<td>$0.00</td>
<td></td>
</tr>
<tr>
<td>Copy</td>
<td>150 Jobs, 481 Prints</td>
<td>$(44.10)</td>
<td></td>
</tr>
<tr>
<td>Fax</td>
<td>50 Jobs, 249 Pages</td>
<td>$(24.30)</td>
<td></td>
</tr>
<tr>
<td>Print</td>
<td>150 Jobs, 988 Pages</td>
<td>$(58.60)</td>
<td></td>
</tr>
<tr>
<td>Scan</td>
<td>50 Jobs, 216 Pages</td>
<td>$(21.00)</td>
<td></td>
</tr>
</tbody>
</table>

Total: $(155.80)

Sample Report – Printer Summary

<table>
<thead>
<tr>
<th>Printer</th>
<th>Jobs</th>
<th>Pages</th>
<th>Sheets</th>
<th>Amount Charged</th>
</tr>
</thead>
<tbody>
<tr>
<td>YMPI00761501</td>
<td>250</td>
<td>1,164</td>
<td>1,164</td>
<td>$115.40</td>
</tr>
<tr>
<td>YMPI007615011002</td>
<td>250</td>
<td>1,164</td>
<td>1,164</td>
<td>$115.40</td>
</tr>
<tr>
<td>YMPI007615155555</td>
<td>250</td>
<td>1,164</td>
<td>1,164</td>
<td>$115.40</td>
</tr>
</tbody>
</table>

Total: 750, 3,440, 3,440, $346.80
Sample Report – Printer Hourly Statistics

Options and Configurations

Authentication
The Uniprint system can be configured to handle a variety of student identification devices including student ID cards, bar codes, PIN numbers, or prepaid swipe cards.

Billing
Uniprint can run multiple billing systems at the same time, charging users via cash card or online system and staff via departmental accounts.

Users can prepay or be billed in arrears. If a user is set-up to 'pay in advance', then their print requests will not be actioned unless there are sufficient funds in their account. The system can also be configured to allow print jobs to be selectively billed and printed automatically.

In addition, printing charges can be varied for each printer. For example a color printer will cost more to run than a monochrome printer, therefore a higher charge can be set for color printers. Print charges may also be varied for each student or categories of students or staff.

Routing
To spread wear and tear and defer replacement requirements over a given period of time, Uniprint has the option of load balancing across a group of printers and of allocating print requests to the best available compatible printer.
If all printers are currently in use, the system determines the printer which will first become available based on the print speed of the printer and the status of the current print job that printer is handling.

Uniprint also supports Local Desktop routing which allows users to pick a list of available printers for job routing.

**User Interface**
Uniprint supports most touch screens, enabling an administrator to set up a kiosk-style print environment with a card reader, touch screen and printer.

The client applications support the following languages: English, French, Spanish, German and Italian.

To allow for options in hardware utilization and expenditure, Uniprint offers multiple user station choices.

**User Station Hardware and Software Configuration**
Users interface with the Uniprint system via Pharos Stations or Network Terminals.

**Pharos Stations**
One Pharos Station application runs on each PC dedicated as a Pharos Station. The PC Pharos Station can be configured to control several printers, billing and account maintenance. Printers are connected to the network or to the Pharos Station parallel port. This software will run on any computer configured to run Windows XP, 2003 or Vista (Business Edition or higher) and requires the minimum RAM required to run those operating systems.

**Pharos Systems recommends:**
Intel Pentium III+ or Celeron processor, 64+MB RAM, 1+GB hard disk plus whatever spooling space may be required.

**Network Terminals**
Pharos supports the following Network Terminals:
- PS20 Card Swipe Network Terminal with accompanying software
- Pharos Omega PS 150 terminal
- Virtual Cash Network Terminal
- Lexmark, Canon and HP iMFP solutions

**Server Hardware and Software Configuration**
Uniprint has been designed to run on a Windows 2003 or 2000 Server machine (with the latest service pack installed) situated almost anywhere on your network. A Uniprint server should be a Pentium 4 or Athlon 64 or better processor with 1GB MB RAM and 120GB disk space.

A single server can run all Uniprint services. It will require 50+MB free space for the Uniprint software, depending on options selected.

The Database Service will require a certain amount of space for SQL Server (see the Microsoft SQL Server installation guide), and for the database. A small environment will require about
100MB of data storage space, whereas a busy environment will require 500MB or more. If you wish to retain long periods of data for trend analysis, then more data space will be required.

If a server will be in a high load environment, then add more memory, more/faster CPUs, OR split the work with a second print server. The server will require enough disk space to hold paused or spooling print jobs until they expire or are printed. In a small environment, we recommend 100-200 MB. A large or busy environment should set aside 1GB or more.

The Pharos Popup Client requires Internet Explorer 5.0 or greater to run.

**Networking**
Uniprint will operate in all environments compatible with Microsoft Windows 2003 or Vista, including the following:
- Novell NetWare
- AppleTalk
- DEC Pathworks
- Microsoft LAN Manager
- NFS Networks
- Remote Access Service via ISDN, X25 and standard phone lines
- TCP/IP networks
- UNIX
- The Internet

**Clients Supported**
Uniprint supports a range of clients:
- Apple Macintosh OS X 10.4+
- UNIX (all flavors, including NEXTSTEP, AIX and A/UX, Linux)

**Printers Supported**
Uniprint supports any printer that uses one of the following languages:
- Postscript Language Level 3,2,1
- PDF
- PCL XL, 5Ce, 4, 3
- HP-GL/2 and HP RTL
- ESC/P2
- EMF
- Text

These printers can be networked or non-networked.

A single Uniprint server can support from 50 to 100 printers—depending on whether the printers are PCL (more) or Postscript (less)—in a busy environment; more if the environment is quiet. The environment is the key determinant.

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3 Based on standard internet-type printing.
Debit Cards and Online Systems
Uniprint can be configured to work with any debit cards, cash cards, swipe cards, student ID cards, and online debiting systems. Uniprint also provides a built-in accounting system, which can get you up and running straight away.

Card reader interfaces available include:
- Absec (Chip and Mag Stripe)
- ACT
- AmeriCam
- BEAR
- CDT
- CMF/Cartadis
- CopiCard
- DAC
- Danyl
- Debitek (Chip and Mag Stripe)
- HECON
- Serial Port ID Card, Keyboard Port ID Card (ID Card readers)
- IPSI (formerly XCP)
- ITC
- Jamex (Coin/Bill Reader)
- MagTek
- Monitor
- Netcam
- TekProd
- TracSystems (Intercard)

Online interfaces include:
- American Express Special Teams
- Blackboard/ AT&T Hako
- Blackboard/ CEC Envision
- CBORD
- Diebold
- Diebold ETI
- General Meters Corporation
- Odyssey
- Innovative/ Millennium
- SIP2

Card and online interfaces are being developed all the time. Check with Pharos Systems for the latest compatibility list, or talk to us about interfacing with your reader.

Frequently Asked Questions
Do I require Microsoft Client Access Licenses (CAL) to operate Uniprint?
SQL 2005 Express Edition (SQL Express) does not require the purchase of additional licenses. However, in larger sites SQL Express is likely to be unsuitable, and SQL Server and the
appropriate CAL are required. At the time of writing, Microsoft has three schemes for licensing SQL Server:

1. Server License + CALs per user
2. Server License + CALs per PC that has a Uniprint component
3. Processor License—no CALs required, but SQL Server price is determined by the number of CPUs the computer running SQL Server has.

In general, the third option is the most cost effective in a site that is too large to run SQL Express.

**Does Uniprint support both color and black and white printing?**

Uniprint does support black and white and color printing—the page counter detects whether the job is color or black and white, and the job can be priced accordingly. The system can also be configured to support most printing options such as duplexing, stapling, collation and rotation.

**What type of printers does Uniprint support?**

Uniprint is designed to support most printers and print languages including Postscript and PCL.

**How many users are supported by the Uniprint system?**

The scalability of Uniprint means that there is no maximum number of users. Adding additional print servers to the system allows you to add more printers.

**How many printers can one Pharos Print Server handle?**

The number of printers any print server can handle is dependent on factors specific to a site such as the print server machine specifications, how busy the associated printers are and how widely spread across the network the printers are. In general, a one Gigabyte print server machine supports printers to a capacity of approximately 1000 pages per minute, which is about 50 printers (20 page per minute printers).

**Do I have to have a Windows Print Server?**

Yes. TCP/IP networking is also required.

**How is Uniprint licensed?**

There are two options for licensing the Uniprint system:

- Base license + license per printer
- User License

The type of license required is dependent on a particular site.

**Can I export data stored in Uniprint?**

An exporting tool in Pharos Reports allows reports to be exported from the Pharos system. There is also a command line tool available for exporting data such on transactions (this data includes all of the job information tracked by the page counter). Of course, a SQL database allows customized queries such as exporting to be made.

**Which authentication systems does Uniprint support?**

- Active Directory
- NT LAN Manager
- LDAP (Novell and other LDAP Servers)
Pharos Systems Corporate Background

Pharos Systems International, Inc. is the recognized industry leader in providing print cost management and cost-recovery solutions to both corporate office and higher education environments. With over a decade of experience, we help customers track, measure, and control their print assets to reduce waste, optimize performance, guide the purchase of new devices, and make the most of existing ones. As a result, over a thousand companies in 21 countries are currently benefiting from optimized printing environments, and are experiencing significant expense reduction. Visit us on the Web at www.pharos.com.