Technical Summary

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ScriptServer® PAN

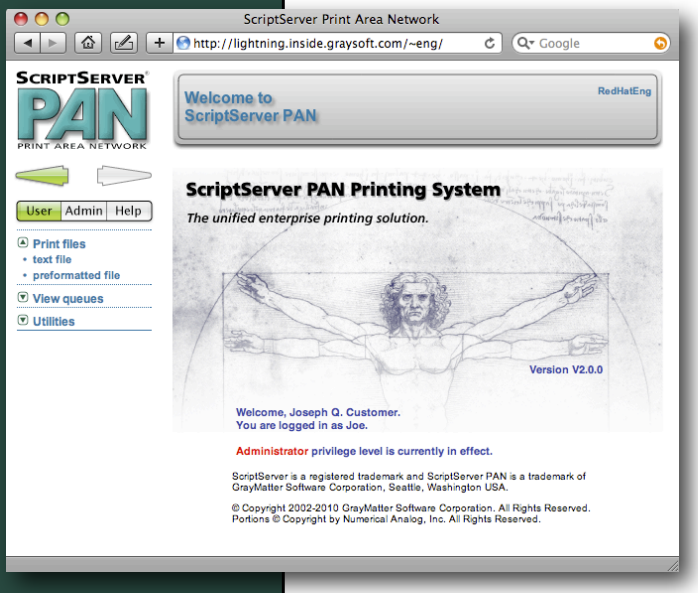
Functional Overview

ScriptServer® PAN™ is a full-featured printing environment created with the following design goals:

- an attractive, responsive, and intuitive user interface based on the web browser
- a printing solution that solves real-world problems in enterprise environments of any size
- the broadest range of operating system support
- maximization of printing resources
- real-time visibility of print, queue, and job status in dynamic browser-based displays
- accessibility of network-wide queues from web, application, and command line interfaces
- support for all network-based printers supporting the PCL and PostScript page description languages
- compatibility with existing network-based printing standards such as LPR/LPD
- centralized management
- hassle-free deployment

User Interface

The PAN user interface is web-browser based and is designed to provide quick access to the print request, queue status, and management screens. It is divided into three main navigation areas: User, Admin, and Help, each with submenus containing links to use and manage the system.



Welcome Screen

Help is available through tutorial information provided in the Help menu and through context-sensitive information provided in popup windows that describe the contents of the currently-displayed screen.

The system also provides command line tools that support print requests, queue creation, listing and manipulation.

Accessing PAN Printing Services

To provide broad access to a wide variety of printing clients, PAN provides several different methods to submit print requests:

Windows printer driver - this free software produces print requests from within any application on the various Microsoft Windows platforms and allows a single submission client to have access to all PAN queues and forms with a single Windows "printer."

Web browser interface - two print request screens are provided under the User menu for printing text files (with control over page formatting) and pre-formatted files that were created with other applications.

Command line interface - the `panpr` utility provides command line access to create printing requests from any computer in the network. This is a free tool that can be downloaded to as many hosts as needed regardless of platform. `panpr` is available for Windows, HP-UX, Solaris, IBM AIX and Linux. It supports over forty different command line parameters to control print formatting, queue and form selection and many other features.

LPD Gateway - this component of PAN allows LPR/LPD print clients from anywhere in the network to submit print jobs to PAN queues. This popular network printing protocol is present on every major operating system available. It provides access to clients where one of the print submission methods described above cannot be used, including Mac OS X, AS/400, SCO Unix, and IBM mainfrmes.

Forms and Resources

PAN is designed to allow extensive customization of its printed output using the powerful capabilities provided using *forms* composed of *resources*. A resource can be a fragment of PostScript code that invokes a particular printing feature such as duplexing or input tray selection. Another type of resource is an image file for a business form. When forms are created in PAN, you add a list of resources to it to create a preset package of printing instructions that are invoked by printing on that form.

Resources are contained in *resource sets*, of which there are three types in PAN: global, shared, and queue-specific. There is only one global resource set in a PAN installation. Shared resource sets are created as needed by a PAN administrator, and each queue automatically has a resource set associated with it when it is created.

When PAN assembles a print job, it searches for the resources in the job first in the queue resource set, then in the shared resource set (if one is associated with the queue), and finally in the global resource set.

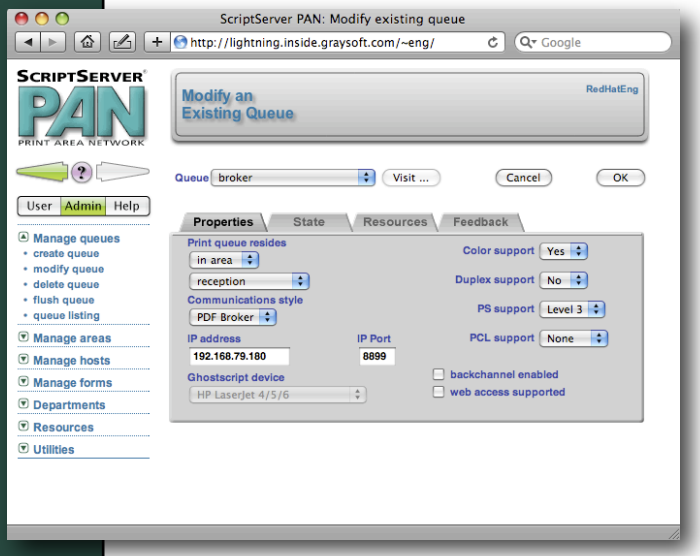
Managing PAN Queues

PAN print queues are created and modified using the web browser interface, which provides a great deal of flexibility over how PAN communicates with the output device.

Device Compatibility

The protocols used to communicate with the output device is controlled with the "Comm. Style" setting in the create and modify queue screens. Among the communications styles supported are:

- HP AppSocket
- LPR/LPD
- IBM/LexMark compatible mode
- Xerox compatible mode
- Stream
- PDF Broker



Printer Language

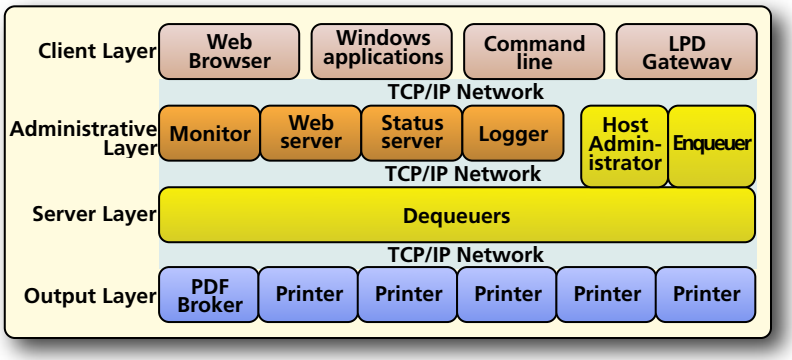
PAN emits page descriptions using PostScript language code, providing the greatest combination of power and device independence. In cases where the output device does not support PostScript, PAN can be configured to automatically convert the output to the page description language supported by the printer.

Areas

Print queues created in PAN can be configured to be in a PAN *area*, which is a logical grouping of queues. This allows queues to be organized into clusters for load balancing purposes or to be grouped according to their physical location. A print job submitted to the area queue will be moved to the first available print queue within the area for processing.

Managing Print Jobs

Because of its device-independent nature, PAN print jobs are not bound to a particular printer when a job is created. Jobs can be moved and copied between queues as needed.



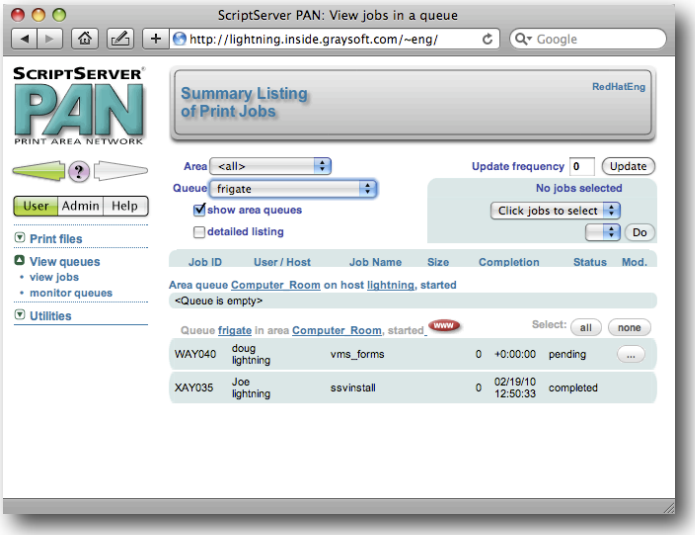
System Components

The system is based on a three-tiered software architecture that include the printing and management clients, any number of hosts that spool print files to the printers (dequeuers), and a single administrative system (master server) that coordinates the interaction between clients and dequeuers. The figure below illustrates the three-tiered software architecture as explained in detail below.

PAN Clients — To provide the broadest access, print clients may be using a web browser interface, a command line interface, an application interface, or the LPD Gateway.

Queue Servers — Any number of hosts can participate in a PAN network as queue servers. These systems accept print jobs from clients (enqueueing) into a local disk file, enter the job into a queue, manage queue scheduling, and output print jobs to the printer (dequeueing). Queues on a host may be grouped into an area, which is a logical grouping of print queues. Queues may be grouped into areas based on geographical location or to provide load balancing.

Master Servers — There is one Master Server per PAN network. It oversees the coordination of clients and queue servers and provides a single point of access for managing and viewing activity in the system.



For instance, a job can be placed in a holding queue, copied to a second queue for a test print, then released for print the complete job by moving it from the holding queue to another queue.

ScriptServer TransFormat™ Support

ScriptServer PAN software now supports ScriptServer TransFormat technology, which provides the ability to completely redesign your legacy business documents without the need for changing the program that creates the print streams.

TransFormats are created using the TransFormat Designer desktop application for Microsoft Windows or Mac OS X. This tool lets you define the *fields* on the printed page of your business documents. You then create one or more *placements* of those fields in the TransFormat, allowing you to customize the font, size, color, and alignment of the field data. Placements can also be rendered in one of 26 supported bar code symbologies. These placements are superimposed on an image of your business document.

Split Fields

TransFormat allows you to specify a *split field*, which is typically a document ID such as a Purchase Order number. When many such documents are batched into a single print stream, it is necessary to split the stream up into individual print streams that represent individual documents for subsequent processing, such as e-mailing a P.O. to a customer. The split field specifies the TransFormat field that signals a new document has begun.

The split field name (such as "POnumber") and value (such as "293765") are then made available to routers as placeholders (*$splitfieldname* and *$splitfieldvalue*, respectively), which can then be used in the creation of an e-mail. For example, the Subject line could be defined as "Your P.O. # $splitfieldvalue" would be expanded to "Your P.O. #293765" in our example.

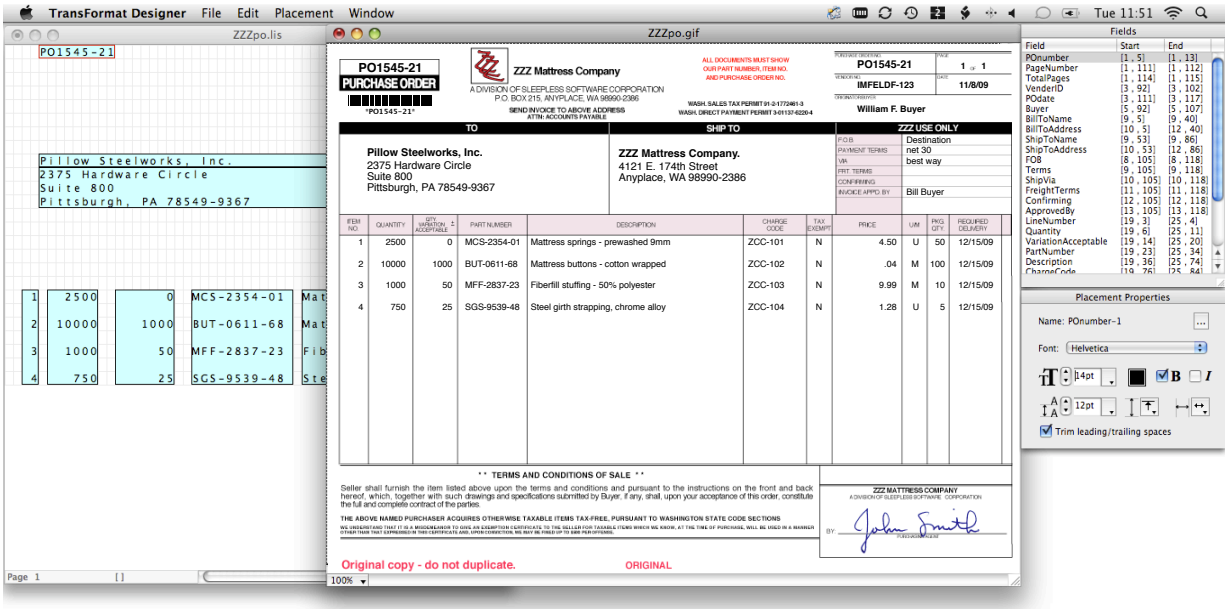
Passthrough Fields

Similar to split fields, *passthrough fields* allow the contents of fields to be passed to PDF Broker for subsequent processing. Continuing with our example of Purchase Order processing, a different field on the page may be defined as "CustomerID" which contains the unique identification of the purchaser. By passing the Customer ID value to the PDF Broker, it can be accessed using the *$passthroughvalue1* placeholder for subsequent processing. Suppose in this example that the P.O. needs to be archived in a directory named after the Customer ID. The passthrough field's value can be used as part of the destination in the "Copy file to folder" field, such as:

C:\POs\$passthroughvalue1

Data Lookup

Starting with PDF Broker V4.0, you can use split field and passthrough field values to look up other values (such as e-mail addresses) in external data files containing customer data.



TransFormat Designer Application

In the screen capture of a TransFormat Designer desktop shown above, the window on the left contains the text from the print data file in a grid. Individual areas that have been defined as fields are displayed in blue. The list of defined fields appears in the Fields palette window at upper right.

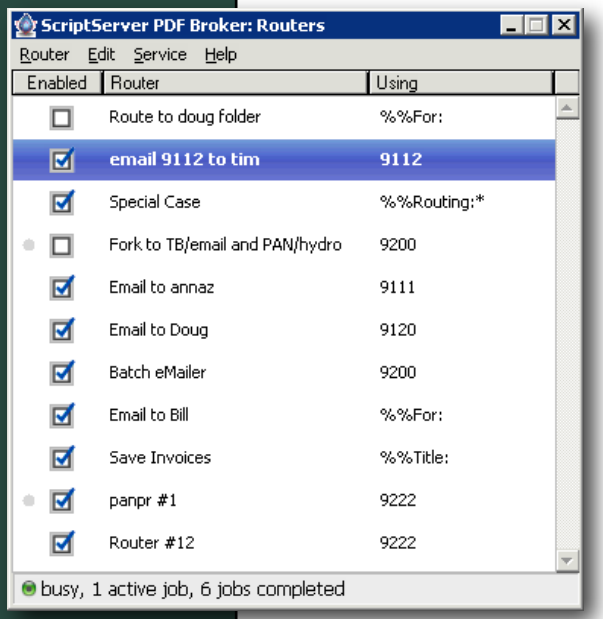
The image window containing the business form is displayed in the center window, which contains the fields that have been dropped on it to create placements. The properties of the selected placement(s) are then manipulated in the Placement Properties palette window at lower right.

When all fields have been placed on the image, the field definitions, placements, all information associated with the redesigned form is saved in a TransFormat project (.xfp) file. This file is in industry-standard XML format, and may be hand-edited using a text editor or an XML-compatible file editor. The project file is then uploaded to ScriptServer PAN as a resource to be incorporated into a PAN form.

When the file on the left is now printed on this form, it will print as it appears in the center window, complete with barcode, form image, and signature.

ScriptServer PDF Broker™ Integration

ScriptServer PAN is also compatible with the PDF Broker software, which also now supports ScriptServer TransFormat technology. The PDF Broker provides the ability to convert your business documents to PDF format and deliver them electronically. This allows you to reduce paper and labor costs by creating and delivering your documents without printing a page of paper.



The ScriptServer PDF Broker processes print streams based on routers, which can be defined to operate as either *comment-based*, or *port-based*.

Port-Based Routing

Port-based routers allow you to route a PDF file based on the (user-defined) port number that it was received on. For example, you can define a router that listens on port 9110 and copies the resulting PDF file to an archive on a network volume.

Comment-Based Routing

Comment-based routers perform their actions based on the comments contained in the header of a PostScript print stream received over the general purpose port (8899 by default.) These comments are standardized based on the Adobe Document Structuring Conventions. For example, one of the standard comments is "%%For:", which specifies the username of the person the print stream was generated on behalf of.

Workflow Automation

Multiple routers can be assigned to the same port or comment criteria, so that more than one action can be performed on a single print stream. This affords significant savings when automating tasks. For example, a router may e-mail a PDF file of a PO to a purchasing agent, where it can be reviewed before being forwarded to the vendor. A second router attached to the same port number could automatically archive the document on a network share. Both activities would occur from a single printing operation.

PAN Integration

To use the PDF Broker with PAN, a PAN queue is configured to send its output to a particular port on the computer with PDF Broker software installed.

ScriptServer PAN Advantages

Features	*Benefits*
Browser interface	Allows use and administration of the PAN system from any computer with a web browser. Centralizes administration of many printers through a single comprehensive tool.
Universal, device-independent printer driver	Supports printing for any client computer in the network. Allows jobs to be moved and copied between queues for different types of printers.
Flexible communications support	Can communicate with virtually every manufacturers' printers.
Powerful forms solution	Handles the creation of complex business documents with minimal effort. Organizes groups of printers by physical location.
Area queue support	Maximizes the use of printing resources through printer pooling.
Scalable	Supports from just a few printers to hundreds of printers with a single installation.
TransFormat support	Transforms legacy business printouts to modern professional documents *without modifying the software that generates the reports.*
PDF Broker integration	Automates PDF file creation and the archival and/or delivery of documents via email.
PPD uploading	Supports all printing features available.
Tiered pricing	Affordable entry level pricing and scales according to the features and number of queues needed.
Cross-product synergy	While each product can operate independently, ScriptServer PAN, PDF Broker, and TransFormat Designer interoperate seamlessly to create a software solution that handles complex document creation and delivery requirements.