



MarketDirect StoreFront® Technology Overview White Paper

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EFI Productivity Suite | *MarketDirect StoreFront Technology Overview White Paper*

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About This Document

MarketDirect StoreFront® is EFI's Web-to-Print solution. MarketDirect StoreFront lets print service providers offer their products and services via the Web. You can use MarketDirect StoreFront either in the cloud (meaning EFI hosts it for you) or as a customer-hosted application (installed at your premises).

This paper is intended to educate current and prospective customers about both the cloud and customer-hosted options for running MarketDirect StoreFront. This paper assumes you have a technical background and are interested in an understanding of how MarketDirect StoreFront is deployed, maintained, and supported either in the cloud or on your premises.

Hosting Options

Why Choose the Cloud?

The cloud is ideal if you do not have the budget, staff, or desire to purchase, manage, and maintain all the hardware and software associated with MarketDirect StoreFront. EFI takes care of this infrastructure for you. Even if you have a large IT organization, the ongoing costs of the cloud-based solution are predictable and the time-to-deploy is rapid so you can focus on successful adoption and marketing.

Why Choose Customer-Hosted?

Customer-hosting works well if you have the time, desire, and resources to incorporate MarketDirect StoreFront into your existing IT infrastructure and to manage it. Customer-hosting gives you total control over the MarketDirect StoreFront application on your network and behind the firewall, as well as over all associated costs.

Cloud	Customer-Hosted
<ul style="list-style-type: none"> You have little local IT support to maintain and support the application. Time-to-market is critical, and in-house IT project schedules do not allow rapid deployment or focused attention. You want to fully outsource the solution including maintenance, backup, and security concerns. You lack a proper facility to host such a solution due to the need to have it supported and functional 24/7 year round. You want to avoid the potential additional purchase of Microsoft SQL Server and you lack database expertise. 	<ul style="list-style-type: none"> You have strict IT restrictions regarding data storage and transfer outside the firewall. You have an existing IT staff that manages and maintains similar Web solutions. You want full control of the solution as it pertains to maintenance and scalability (e.g., additional hardware, bandwidth, disk space, and processing power). You have previously purchased customer-hosted Web solutions and want to remain consistent with past procurement decisions. You have Microsoft® SQL Server® licensing in place and want to leverage that investment.

MarketDirect StoreFront Overview

MarketDirect StoreFront is a configurable Web-based solution for selling print and print-related products. MarketDirect StoreFront lets print service providers extend their products and services from their shop floor to their customers via the Web.

MarketDirect StoreFront uses the Microsoft .NET Framework, and is written in C# (C Sharp). The Web site uses the ASP.NET framework. The MarketDirect StoreFront database runs on Microsoft SQL Server.

MarketDirect StoreFront “Faces”

MarketDirect StoreFront offers three unique “interfaces” or views into the system:



- Print buyers order products and services and check job status online.
- Operators produce items based on the job specifications provided by the customer.
- Management views and analyzes business data using the MarketDirect StoreFront reporting features. MarketDirect StoreFront can also be integrated with many EFI MIS systems, in which case an even greater degree of reporting is available.

Storefronts

Classic storefronts are the original storefronts available in MarketDirect StoreFront. Products offered on these storefronts are ordered using either a classic HTML Product Builder (with an optional Flex preview) or a Flex-based Visual Product Builder.

SmartStores are the second generation of storefronts in MarketDirect StoreFront. SmartStores make use of HTML5, AJAX, and other responsive technologies for building contemporary product catalogs and storefronts. These storefronts scale smoothly from traditional desktops and laptops to mobile devices (such as tablets and smartphones). Products offered on SmartStores all use Visual Product Builder for a consistent buyer experience. SmartStores also offer improved performance.

Note A tutorial on “Designing and Publishing SmartStores” is available on the MarketDirect StoreFront Forum (<http://dsfforums.efi.com>).

Products

Printers can offer a variety of print products, print-related products, and other products on a MarketDirect StoreFront site:

Ad hoc products

- The printer offers the base product, e.g., brochure or booklet; print buyers supply the content they want printed and select print options (e.g., type of paper, binding, etc.). Ad hoc products can be regular size or oversized/wide format.

Static products

- The printer offers a product with fixed content (e.g., course materials) and either sells the product as is or allows print buyers to change print options (e.g., type of paper, binding, etc.).

Non-printed products

- The printer offers merchandise (pens, logo items, reams of paper, etc.) or print products that already exist (vs. those that need to be printed according to print buyer specifications).

Personalized products: Design Studio

- The printer creates a template in MarketDirect StoreFront and hosts on the site; print buyers personalize the product. For example, print buyers may be able to position, rotate, or re-size text, images, or shapes; add their own text, images, or shapes; edit and format text; or enhance images.
- A license for Design Studio is required.

Personalized products: Smart Canvas

- The printer creates a Smart Canvas template and hosts on the site; print buyers personalize the product in various ways, for example, by adding or editing text, images, shapes, or QR codes, or completing a form.

Personalized products: Variable Data Printing (VDP)

- The printer hosts the VDP template; print buyers supply data to personalize the product, for example, supply contact information for business cards.
- A license for a VDP module (EFI VDP, XMPie®, or FusionPro®) is required.

Direct mail products

- With EFI VDP and AccuZIP configured in MarketDirect StoreFront, printer hosts a template; print buyers provide or purchase a mailing list (which is processed by AccuZIP for USPS readiness and reduced mailing rates) and personalize the product.
- A license for VDP Products: EFI VDP is required, as is an AccuZIP account.

Cross media marketing (CMM) campaigns

- CMM campaigns are products for increasing sales, marketing services, offering time-limited discounts, announcing promotions, and so on. The printer hosts the campaign while buyers customize and configure it.
- A Cross Media license (under VDP Products: EFI VDP) is required.

Oversize/wide format products

- The printer offers the base product, e.g., banner or oversize poster; print buyers supply the content and select print options (e.g., grommets).

Digital downloads

- The printer offers a product in electronic form (e.g., eBook, course materials, photos, forms) that buyers download.
- The printer can configure products (except for ad hoc and non-printed products) to give buyers a choice of deliverables: print only, digital download only, or print and download.

Kits

- The printer assembles a set of (non-kit) products into a package that print buyers purchase together. For example, a wedding package might include a photo card invitation (Design Studio product), a wedding program (ad hoc product), envelopes addressed to those being invited (VDP product), and a key chain (non-printed product).

Matrix products

- The printer creates a composite product that combines two or more products into a single product. For example, a cotton shirt might be available in three colors (red, blue, and green) and three sizes (small, medium, and large). Instead of each variation (e.g., a small red shirt, a small blue shirt, etc.) being a separate product on the storefront (cluttering up the storefront), there is one product (cotton shirt) offered, and buyers select the color and size they want during the order process. In another example, an ad hoc product could be offered in three quality levels allowing buyers to choose the quality they want.

Entities

Entities are optional building blocks in MarketDirect StoreFront for defining organizational structure. Entities require a license.

Entities offer a top-down, multi-level approach to sharing (or not sharing) products, media, storefronts, pricing, etc., in different parts of a single MarketDirect StoreFront installation. They can be used for:

- **Enterprise organizations with subsidiaries**

Subsidiaries may be separate business units or regional subdivisions with a combination of shared and unique Web-to-Print needs.

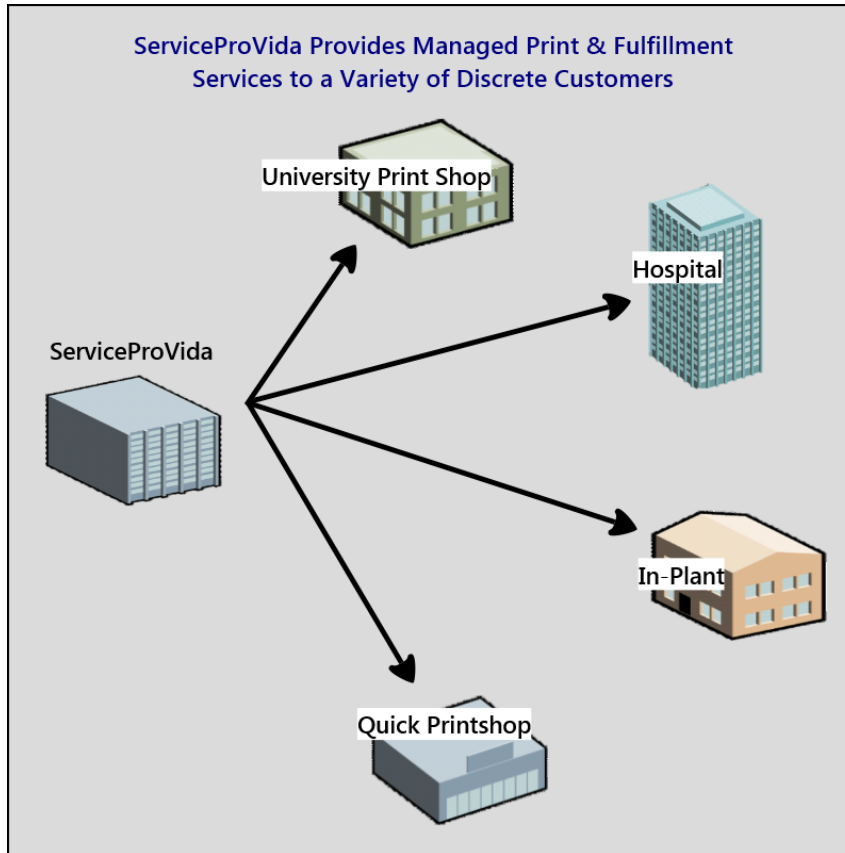
Example: PrintStarCo is based in New York City and has five subsidiary branches—US, Canada, Brazil, Europe, Asia—that have both shared and unique Web-to-Print needs. The PrintStarCo parent administrator (the U.S.-based MarketDirect StoreFront license holder) would create five entities for each of the international branches. Administrators at each of the entities could in turn create sub-entities as needed for branches beneath them. The corporation can manage MarketDirect StoreFront from a single instance for consistency of pricing, product offerings, user database, reporting, etc., while still giving each branch the flexibility to manage non-shared (unique) assets.



- **Large managed service businesses**

Service businesses typically include many parallel customers with unique Web-to-print needs.

Example: ServiceProVida provides Web-to-print services to multiple discrete client companies, each with a unique set of needs. Entities provide a way to separate these client companies within a single instance of MarketDirect StoreFront to prevent the intermingling of user data, product data, pricing data, etc. The entity branches can be built with as much or as little interconnectivity between them as needed. The ServiceProVida parent administrator (the MarketDirect StoreFront license-holder) would create an entity for each of the organizations the company services. Administrators of each of the entities could in turn create sub-entities as needed for branches beneath them.



- **“Marketplace” sales**

Here affiliates or partners can sell their products online in a space they control (e.g., a photographer offers prints and cards for sale), but the primary MarketDirect StoreFront owner produces or fulfills the products. Entities make it possible for printers to partner with content creators (such as photographers, fine artists, book authors, publishers, etc.) by giving them a space on the MarketDirect StoreFront site where they can sell their products through their own storefront. The production and fulfillment is managed by the MarketDirect StoreFront owner, however.

Example: MarketPlace Printing wants to provide each of its content creation partners with its own site to drive business both to the partner and the printer (who produces their products). The MarketPlace Printing parent administrator (the MarketDirect StoreFront license-holder) would create an entity for each content creation partner. Administrators of each of the entities could in turn create sub-entities as needed for branches beneath them. The chart below illustrates how the entities and sub-entities might be organized.



Content File Handling

One of the core functions of MarketDirect StoreFront is to deliver content from a print buyer to the print service provider.

Note When MarketDirect StoreFront is customer-hosted, you are responsible for virus protection on your MarketDirect StoreFront server. Please keep this in mind before opening up your system to uploaded or downloaded files.

MarketDirect StoreFront offers several ways of obtaining content from print buyers including:

- Upload from print buyer's computer:
 - PDF file upload.
 - Native file upload (leaving native files untouched).
 - Native file upload with server-side PDF conversion.

Note Files are uploaded to MarketDirect StoreFront using HTTP as a standard option. The entire site can also be set up using HTTPS throughout, however, so files could be uploaded using either HTTP or HTTPS.

- Download from cloud services – Google Drive™, Dropbox, or EFI PrintMe®:
 - PDF file download.
 - Native file download (leaving native files untouched).
 - Native file download with server-side PDF conversion.
- Reference to non-digital/hard copy (“offline”) content.

- Client-side PDF conversion and upload via EFI PrintMessenger.

Note PrintMessenger (a standard feature) is a virtual print driver. When installed on a print buyer's computer, a print buyer can use **File > Print** (from Windows® or Apple® Macintosh® applications) and select PrintMessenger as the "printer." PrintMessenger then converts documents on the print buyer's computer to high-quality PDFs and uploads them to the site. For more information about PrintMessenger, see page **Error! Bookmark not defined..**

- Background Uploader for wide format files.

Note Background Uploader is a utility for uploading extremely large files (e.g., high resolution) for wide format ad hoc products. While files are being uploaded in the background, print buyers can continue with the ordering process. If a print buyer is prompted to do so when ordering a wide format product, he/she must install Background Uploader. (This is a one-time procedure.) After that, the content file for a wide format ad hoc product is always uploaded in the background.

MarketDirect StoreFront Technology Platform

Overview

MarketDirect StoreFront has four main components:

- Database – storage and tracking of information about print buyers and jobs.
- Web site – the set of files configured to host the storefront, as well as its backend (administration and production).
- File storage – files that are not part of the Web site, for example, content files uploaded by print buyers, VDP template files, files used for production and reordering, and log files.
- Supporting services – PDF converter, Remote Print Center, etc.

MarketDirect StoreFront uses the Microsoft .NET Framework and is written in C# (C Sharp). The Web site uses the ASP.NET framework.

The MarketDirect StoreFront database runs on Microsoft SQL Server. (For information about supported versions of SQL Server, see the *MarketDirect StoreFront Release Notes*.)

MarketDirect StoreFront and any purchased optional modules are keyed to a "dongle" (physical software licensing device which requires a USB port on the server) that accompanies the software. The software is activated by a product key, which is a unique series of letters and numbers assigned by EFI and tied to the dongle.

JDF Support

MarketDirect StoreFront supports JDF-enabled devices. JDF is an industry standard for simplifying the exchange of job information among print and prepress applications and output devices, for example, between MarketDirect StoreFront and a Fiery® controller. JDF specifies how a job is to be handled and produced—from customer concept to final production, for example, 100 copies of a 10-page document on 20# letter-size white paper, printed duplex, in black-and-white. This information is captured in a job ticket that contains JDF information.

Typically, when MarketDirect StoreFront is communicating with a JDF-enabled device:

1. The print buyer provides (uploads) PDFs and selects print options.
2. The print options are incorporated into a job ticket that contains JDF information.
3. This JDF information and the PDFs are packaged and routed to a JDF-enabled device.
4. The job is processed and printed using the JDF information that was transmitted.

Secure Communication

Credit card information

MarketDirect StoreFront supports numerous payment gateways, for example, Payflow Pro, CyberSource, PayPal Payments Pro, and Pagador. Once you establish a merchant account with one of these gateways you can configure the account in MarketDirect StoreFront and accept online credit card payments.

Depending on the payment gateway being used, MarketDirect StoreFront may display a form that collects credit card information. For the exchange of credit card information, the system always uses secure sockets (an HTTPS connection) with the strongest level of encryption currently available for Web applications. Credit card numbers are *never* stored in the MarketDirect StoreFront database, but are instead passed through encrypted to the payment gateway.

For online credit card processing on a *customer-hosted server*, MarketDirect StoreFront requires you to have a valid SSL certificate installed on your site. SSL stands for Secure Sockets Layer, and is a protocol for securing data transmissions across the Internet. SSL provides data security by encrypting the print buyer's credit card number and other information when it is being communicated to the payment gateway.

SSL certificates allow the client (Web browser) to authenticate the server prior to establishing the SSL session. The certificates are typically signed by a trusted third party – known as a Certification Authority (CA) – to ensure their validity. The payment transaction is processed on a secure HTTPS page, and the SSL padlock icon may be displayed in the browser to indicate that the transaction is secure.

Other information

For the exchange of information other than credit cards, MarketDirect StoreFront uses normal HTTP transfer protocols, unless the site administrator chooses the 100% HTTPS option, in which case all communication is encrypted.

Basic user information, such as shipping and billing addresses, is kept in the MarketDirect StoreFront database, and is dependent on the server and network security of the system. User passwords are encrypted using one-way SHA1 (Secure Hash Algorithm) encryption.

User Management and Authentication

What Is User Authentication?

User authentication is the process of restricting a system to authorized users. MarketDirect StoreFront offers the following methods for authenticating users who access your site:

- MarketDirect StoreFront internal authentication
- Active Directory authentication (available as a licensed option in two different modes)
- Login bypass (available as a licensed option)

Tip For more information about user authentication, see the *MarketDirect StoreFront User Authentication White Paper*; for information about implementing and configuring user authentication, see online MarketDirect StoreFront Help when on the administrative side of the site.

MarketDirect StoreFront Internal Authentication

Overview

Internal authentication is part of the core MarketDirect StoreFront product. A user enters a login name and password, and these are checked against information on the MarketDirect StoreFront server to make sure the user is valid. Passwords are SHA1 (Secure Hash Algorithm) encrypted. “Strong” passwords can be enforced.

You can import users in bulk into MarketDirect StoreFront or add them manually. In addition, you can give users the option to register themselves.

Bulk import

You can add users to MarketDirect StoreFront by importing them. You can do this periodically to add new users to the system. A bulk import includes user passwords, but all passwords are stored on the MarketDirect StoreFront server using one-way SHA1 (Secure Hash Algorithm) encryption.

Manual addition

Administrators can add new users to the system manually.

Self-registration

MarketDirect StoreFront allows users (print buyers) to register themselves on the site. (Self-registration can be turned on/off with a site-level setting.) The registration process requires a user name, password, email address, and security question (for password resets). This information makes up the *user profile*.

- A user name can be any text string or an email address (but there is no validation of the email address format).
- Tools in MarketDirect StoreFront allow administrators to set security parameters for passwords, e.g., to enforce the use of “strong” passwords that decrease the risk of security breaches.
- An e-mail address is required for all self registrants. This must be a valid email address that includes @ (but the email address is not validated).
- A MarketDirect StoreFront profile can include many fields, which you can configure to be required or hidden (with **Site Settings > User Profile Fields**).

Active Directory Authentication

What is Active Directory authentication?

MarketDirect StoreFront supports Active Directory authentication. When Active Directory authentication is used with MarketDirect StoreFront, as users attempt to log into MarketDirect StoreFront, their credentials (user name and password) are verified by an Active Directory server. If the users are valid, they are logged into MarketDirect StoreFront.

Active Directory authentication supports single sign-on (SSO) which means that a user logs into one system and then has access to other systems without having to log into each system separately. With MarketDirect StoreFront SSO, when a user is logged in on a Windows system via Windows authentication, as soon as the user browses to the MarketDirect StoreFront site or clicks an SSO button, he or she is automatically logged into MarketDirect StoreFront.

In MarketDirect StoreFront, Active Directory authentication is a licensable option (**Authentication Pkg: LDAP and Login Bypass** must be selected on the License page).

Active Directory authentication is available in two modes:

- Site-level Active Directory authentication.
- Active Directory Services with Federated Identity Services for site or company-level authentication.

Site-level Active Directory authentication

This mode of authentication can be used only on customer-hosted (standalone) MarketDirect StoreFront installations. Cloud-hosted installations must use Active Directory Services with Federated Identity Services as described on page 16.

When site-level Active Directory authentication is used, MarketDirect StoreFront communicates with an enterprise-wide Active Directory (AD) server *in the same domain/network* as the MarketDirect StoreFront server. The AD server contains a directory of user information and associated privileges. When users attempt to log into MarketDirect StoreFront, their credentials (user name and password) are verified by the AD server, which in turn communicates the information on the users to MarketDirect StoreFront.

Active Directory Services with Federated Identity Services

This mode of authentication can be used on both customer-hosted and cloud (EFI) hosted installations of MarketDirect StoreFront.

Important This authentication mode is supported only on SmartStores, not classic storefronts. It also does not support PrintMessenger.

When Active Directory Services with Federated Identity Services authentication is being used, MarketDirect StoreFront communicates with one or more Active Directory Federation Servers (ADFS) that contain a directory of user information and associated privileges. When users log into MarketDirect StoreFront through, for example, a company-branded URL, their credentials are authenticated against the appropriate ADFS, which in turn communicates information on the user to MarketDirect StoreFront.

Note Two federation protocols are supported: WS-Federation and SAML 2.0. The SAML 2.0 protocol supports Shibboleth, an open source federated identity solution.

Cloud-hosted sites have the option of providing single sign-on (SSO) capability and authentication at the *company* level with each company pointed to its own ADFS.

Important To use Active Directory Services with Federated Identity Services authentication, *you must set up and configure your own Active Directory Federation Server (ADFS)*. EFI will not assist with the setup of ADFS nor provide support for it. If you are using a Microsoft solution (WS-Federation protocol), contact Microsoft. For SAML 2.0 and Shibboleth, go to <http://www.shibboleth.net>.

What MarketDirect StoreFront Active Directory authentication does

Regardless of the mode being used:

- When a user logs into MarketDirect StoreFront via AD for the first time, a MarketDirect StoreFront user profile (account) is automatically created. This involves copying information from the AD user fields to the MarketDirect StoreFront user profile fields. (For this to work the MarketDirect StoreFront user profile fields must be mapped to the AD user fields.)

Note Users can still register themselves manually in MarketDirect StoreFront when AD is enabled, but the manually-created profile will not be authenticated against AD.

- When a user logs into MarketDirect StoreFront, AD authentication verifies his or her user name against the AD server to make sure that the user is valid.
- AD authentication prevents someone from logging into MarketDirect StoreFront if he/she was deleted or made inactive in the AD database.
- AD authentication prevents someone from creating a new user profile if he/she was deleted or made inactive in the AD user database.
- If a user's AD profile changes, the MarketDirect StoreFront user profile fields are automatically updated when the user logs in. For example, if a user's address changes, it will be automatically updated in MarketDirect StoreFront.

Note For more information about AD authentication, see the *MarketDirect StoreFront User Authentication White Paper*; for information about implementing and configuring both modes of AD authentication, see online MarketDirect StoreFront Help when on the administrative side of the site.

Login Bypass

Login bypass is a licensable option (**Authentication Pkg: LDAP and Login Bypass** must be selected on the License page). Login bypass allows print buyers to avoid the site home/login page. When login bypass is implemented, a print buyer's login credentials are sent to MarketDirect StoreFront from an external system so the print buyer does not have to log into the site by providing login credentials.

Note A user's (print buyer's) Windows/domain login does not interact in *any* way with the login bypass functionality. For login bypass to work, users must arrive at MarketDirect StoreFront from another Web page that passes login credentials.

Implementation requirements

Database synchronization between your system and the MarketDirect StoreFront user database is required.

Implementation

The user profile in MarketDirect StoreFront includes a **SSOToken** field. This field can contain a unique ID value that matches a unique ID value in your user database(s). When this ID is passed (via form post) to a special MarketDirect StoreFront page (signin.aspx), MarketDirect StoreFront matches the ID to the field in the MarketDirect StoreFront user table and logs in the associated user.

A password can be required for an additional level of security. (PermitEmptyPasswordSSO in the MarketDirect StoreFrontConfiguration table can be set to True or False.)

Initial setup

During initial setup, users (print buyers) must be bulk imported into MarketDirect StoreFront to synchronize the user information between MarketDirect StoreFront and your external user management database.

Connecting your system to MarketDirect StoreFront

Your system must have a Web page that passes the login credentials to MarketDirect StoreFront. HTML samples are available in the *MarketDirect StoreFront User Authentication White Paper*.

Adding new users

Users can be added via bulk import as well as during regular synchronization with your user database. In some cases, EFI Professional Services can perform additional fee-based services to extend synchronization.

If self registration is enabled in MarketDirect StoreFront, site visitors (print buyers) can create a user profile themselves. Print buyers who register themselves, however, will not be able to use login bypass until the site administrator edits their user profile to include an **SSOToken**. In addition, the user must be coming from a referring Web page that is passing login credentials (the unique ID).

User synchronization

When using login bypass, the customer and MarketDirect StoreFront user databases must be synchronized. Users (print buyers) should be updated on a regular basis using the MarketDirect StoreFront bulk import. In some cases, EFI Professional Services can perform additional fee-based services to extend synchronization.

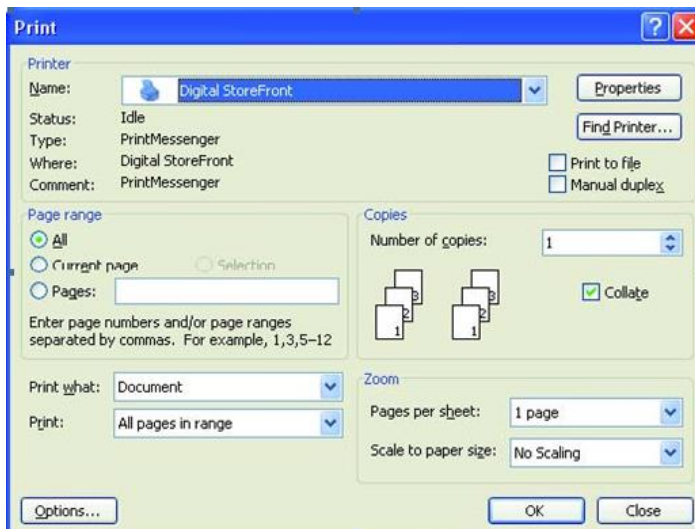
E-mail notifications

Unless print buyers are expected to know their user names and passwords, EFI recommends that email notifications (including those for approval workflows) are turned off when using login bypass.

EFI PrintMessenger

A print-ready file streamlines any print service provider's workflow. Several print industry studies have shown that upwards of 30% of all files submitted are not print-ready (they require some manipulation by the print facility prior to output). EFI PrintMessenger provides a solution to the frustration for both the print buyer and the print service provider.

PrintMessenger is a print driver that requires a one-time installation on a print buyer's Windows or Macintosh computer. PrintMessenger connects the **File > Print** command in applications such as Microsoft® Word to the site – print buyers simply select PrintMessenger as the "printer" when working with a document on their computers. (In the figure below, the name of the printer is "MarketDirect StoreFront," but Print Messenger can be customized with your logo and company name.) PrintMessenger then converts documents on the print buyer's computer to high-quality PDFs and uploads them to the site.



By creating the PDF at the source (at the print buyer's computer), PrintMessenger converts the native file (Word, PowerPoint, etc.) to a PDF; embeds the fonts and graphics; and optimizes the file for printing. Print buyers do not need to know how to properly create a PDF. They only need to understand how to use **File > Print** (including selecting paper size with advanced printer properties), and then proof the resulting PDF. In turn, the print facility receives only print-ready PDFs that were proofed by the print buyer.

Installation

PrintMessenger requires a one-time installation on each print buyer's Windows or Macintosh computer. The installation requires administrative privileges. Print buyers can either install PrintMessenger themselves or IT departments can "push" the driver out to their user base as part of normal maintenance activities. PrintMessenger comes wrapped in an MSI script for easy enterprise deployment by IT departments.

System requirements

For the current system requirements for PrintMessenger, see the *MarketDirect StoreFront Release Notes*.

Server-Side PDF Conversion

In addition to, or instead of, using PrintMessenger, print buyers can upload PDFs they have created themselves from their computer while placing orders on the site and/or they can download files from a cloud service (Google Drive, Dropbox, or PrintMe). They can also upload/download content files in a variety of other file formats to the site where they can be converted to PDFs automatically. The ability to perform server-side PDF conversion lets you satisfy your print buyers, while still achieving the benefits of a streamlined digital workflow.

Tip MarketDirect StoreFront can be configured to allow files to remain in non-PDF (native) format.

Fonts

When files are converted to PDFs in MarketDirect StoreFront, a customer-hosted MarketDirect StoreFront server must have all the fonts installed that are going to be used for jobs. If these fonts are not installed on the server, the PDFs that are generated from native files are unlikely to be in a usable state.

Required applications

For server-side PDF conversion of documents on a MarketDirect StoreFront customer-hosted server, Microsoft Office Professional must be installed on the server. In addition, the .NET programmability option must be set to **Run from My Computer** for all applications in the Office suite. For currently supported versions of Office, please see the latest *MarketDirect StoreFront Release Notes*.

Supported file formats

The most popular file formats supported by MarketDirect StoreFront's server-side PDF conversion include:

- Microsoft Office
- Microsoft Visio®
- Microsoft Project
- OpenOffice™
- WordPerfect®
- Rich Text Format (RTF)
- TEXT
- PostScript
- EPS
- TIFF
- GIF
- JPEG
- PNG

All Adobe products support native PDF export so Adobe products are not converted by the server-side PDF converter. Likewise, current versions of Quark also support native PDF conversion and are therefore not converted.

General Security Considerations

Every organization has its own security requirements, depending on the nature of its business, the industry in which it operates and its business model. Although all security aspects are important, every organization assigns a varying level of importance to each aspect and chooses a different deployment mechanism.

Security starts with a company's IT security policy—essentially, who has access to what resources. Security architecture must also encompass the entire network. Controls must be installed in all critical components. Various security products and technologies can be deployed to enforce the policy, but they must all work together.

A company's IT security policy must also address the many different users of IT resources. Customers, telecommuters or remote employees, partners, and suppliers all need to connect to the organization over the Internet. While this situation can possibly expose a business' IT assets, authentication, tunneling, data integrity, and confidentiality technologies can address potential security risks. Depending on who the users are, their role, and the information they want to obtain, access to a company's network may be granted or denied.

Roles and Access Privileges

Virtually anyone has access to public Web pages and often has access to information available on an FTP server. These servers frequently reside in what is called a demilitarized zone (DMZ). The DMZ lets a company offer a public presence without compromising the security of its internal network. The first critical step in preventing unauthorized users from accessing internal networks and servers is to correctly configure the services and systems in the DMZ. A firewall can protect the services that operate within the DMZ. Firewalls prevent direct access into the organizational network and servers by unauthorized users or services. For example, a firewall can allow e-mail from specified servers to come through, yet block messages from other servers.

Employees, partners, and suppliers outside a company's network may access the company's internal IT resources if they are properly identified or authenticated. Information traveling over a public network to and from these users can be made private through encryption technology.

Employees inside the organization can be segmented by role. For example, the sales team can be prevented from accessing engineering servers, while everyone except for accountants can be restricted from accessing financial data. This can be accomplished by deploying secure servers, multiple firewalls, or other security measures.

Availability

Users of Internet applications demand high availability and optimum performance. All users such as employees, customers and partners desire predictability and availability. Protecting a company's IT assets from degraded performance, unplanned outages, and unauthorized access is essential to maintaining the high service levels that users expect.

Consistency

Users also expect systems to perform in a consistent manner. If software or hardware exhibits radically different behavior, it could be a sign of corrupted applications or data. Security utilities and mechanisms can check servers for application and data consistency. The monitoring and maintenance of system configurations promotes reliability and availability.

Access Control

Unknown and unauthorized individuals can cause damage to your IT assets. If a system is attacked, network security administrators must determine how access was gained, what damage was done, and who accessed the system. Recovering from such episodes can require considerable time and expense. Access to servers, data, and other IT resources must therefore be strictly controlled by user role, permission, and authorization.

Data Confidentiality and Encryption

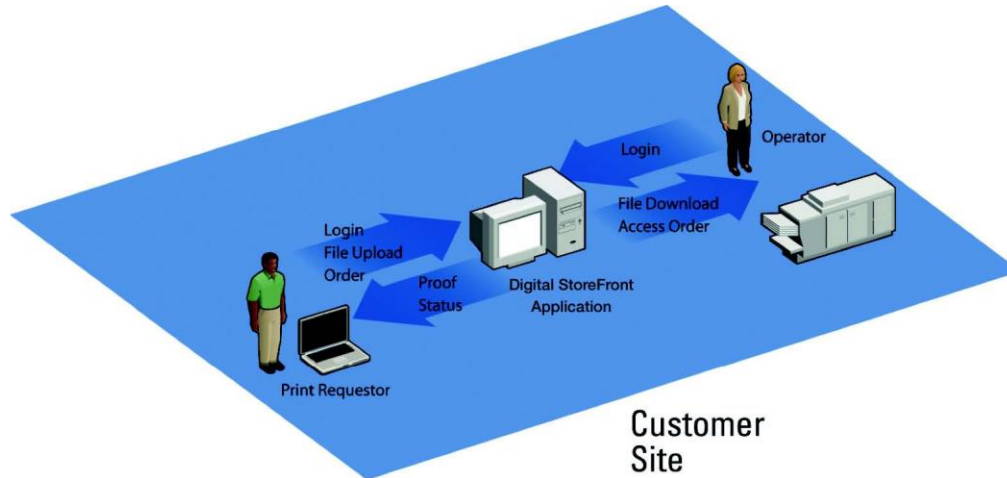
Information must not be read or copied by anyone who was not explicitly authorized to do so. Data confidentiality includes the protection of information that is on a server or is traveling across a network, as well as seemingly harmless data that can be used to infer confidential information (e.g., the internal IP address of a mail server). Encryption ensures confidentiality by making the data meaningless to anyone who is not authorized to read it.

Authentication

Clients need some way of verifying that the server they are communicating with is a valid server. Likewise, servers need to know that the clients are valid. Various levels of authentication are possible, from simple login-password pairs to token cards and biometric mechanisms. Authentication of clients and servers is a fundamental part of allowing access to specific services.

Customer-Hosted MarketDirect StoreFront

When MarketDirect StoreFront is customer-hosted (installed on your premises), you retain full control of MarketDirect StoreFront on your network behind your firewall. The customer-hosted option is available either as a software package (you provide the hardware) or as an integrated solution with hardware provided by EFI.



Software only

You can purchase MarketDirect StoreFront as software only and provide the appropriate hardware yourself. Hardware and operating system configurations depend upon your scalability requirements.

It is important to look closely at the projected job volume through the MarketDirect StoreFront Web site to size the system appropriately, keeping in mind that the volume should grow over time as print buyers adopt this shopping solution.

Hardware option

If needed, EFI can provide a Dell server with the software installed for deployment on your premises.

System requirements

For the current system requirements, see the latest *MarketDirect StoreFront Release Notes*.

Product Scalability

The implementation of a customer-hosted, enterprise-class MarketDirect StoreFront system (e.g., regional or global in nature, serving multiple facilities or print centers) requires you to keep performance, reliability, and availability in mind when considering how to make the system scalable.

To this end, MarketDirect StoreFront requires the use of Microsoft SQL Server. (For the currently supported versions of SQL Server, see the latest *MarketDirect StoreFront Release Notes*.)

The MarketDirect StoreFront configuration that you deploy should be based on EFI recommendations as well as your own corporate IT group's standards and recommendations and/or those of your own Microsoft technical resources.

MarketDirect StoreFront Server Components

- Database (print buyer, job, and related information).
- Web site (set of files configured to host the storefront, as well as its backend used for administration and production).

- File storage (for content files uploaded by print buyers, VDP templates, files used for production and reordering, log files, etc.).
- Supporting services (PDF converter, Remote Print Center, etc.)

MarketDirect StoreFront uses the Microsoft .NET Framework. The components listed above can all be installed on one computer, but you can install the database on a separate computer. You can also store files separately.

The network infrastructure is another important consideration for MarketDirect StoreFront scalability, but network infrastructure is beyond the scope of this document. In general, however, infrastructure issues that can affect scalability include Internet or intranet bandwidth capacity, load balancing, LAN switch configurations, and bandwidth for the server environment.

Database server

MarketDirect StoreFront requires the use of Microsoft SQL Server. For the currently supported versions of SQL Server, see the latest *MarketDirect StoreFront Release Notes*. While SQL Server can technically be installed on the same computer as the other components of MarketDirect StoreFront, EFI recommends that you install SQL Server on its own server hardware if possible.

File storage

The MarketDirect StoreFront files that require storage include job content files coming in from print buyers, PDF files saved on the site for re-ordering, and PDF templates used for variable data printing (VDP). Job content files may be PDF files or files in native format, both of which can be very large (multiple megabytes).

When considering where to store these files, keep these factors in mind:

- The available storage on the computer, which should be easily scalable through the addition of drives.
- File retention time – MarketDirect StoreFront lets you configure how long files are kept.
- IO performance, consisting of four factors:
 - Network connectivity to the MarketDirect StoreFront Web server including server NIC cards and LAN switches.
 - Bus speed and cache.
 - RAID hardware and configuration.
 - CPU speed for converting native files.

To determine actual storage needs, you must estimate the frequency and average file size of incoming jobs, as well as the size of any documents that print buyers want to store on the site for re-ordering.

Remote Print Center (RPC)

Remote Print Center (RPC) is a specialized application that allows files (such as job tickets, files uploaded by print buyers, and so on) to be output to a computer in another domain, for example, when the print buyer is outside the print production facilities' network. For more details about RPC, see "Remote Print Center" on page 26.

PDF Conversion Server

Server-side PDF conversion requires a conversion service that must reside on the same computer as your MarketDirect StoreFront file storage. (For more information about file storage, see page 22.)

Bandwidth Considerations

When you intend to host your own MarketDirect StoreFront server, you must understand (and anticipate) the volume of files that you may receive from print buyers so you can size your network connections accordingly.

LAN bandwidth

If all of your job submission traffic originates inside your own building or on a campus intranet network that connects buildings, your primary bandwidth consideration is your server LAN connection. The MarketDirect StoreFront integrated solutions from EFI are supplied with 100mbps Ethernet LAN connectivity.

WAN or Internet bandwidth

If you are a print-for-pay facility, or you serve print buyers outside the walls of your own business over an Internet connection, you must ensure that you have the necessary bandwidth to support incoming files submitted for jobs.

A 10 Mb file can be transferred over a T-1 speed connection in approximately one minute. This metric can be used as a guideline to help you determine the bandwidth capacity you need based on the file type you expect and the number of print buyers simultaneously delivering files to your facilities.

MarketDirect StoreFront System Maintenance

Database maintenance should be performed at regular intervals to ensure optimal performance and reliability. An initial recommendation is to perform database maintenance weekly. The key advantages of regular database maintenance are:

- Improved performance: de-fragmenting the information, re-organizing the indexes.
- Decrease in overall database size.

EFI recommends using the Microsoft SQL Server Management toolset to perform regular database maintenance.

Backup and Recovery

EFI strongly recommends backing up your system. Depending on your tolerance for lost data, EFI recommends a daily backup using the following “grandfather–father–son” rotation schedule for backup of the application data. Grandfather backups occur monthly and are saved for 3 years. Father backups are done weekly and are saved for 10 months. Son backups are done daily and are saved for 4 weeks.

The key backup elements are the Inetpub folder and the EFI folder under Program Files. (Always stop the database services before performing backups.)

Note You should *always* back up your MarketDirect StoreFront system before you apply any software upgrades, updates, or hot fixes. Do *not* rely solely on the backup offered during an installation upgrade.

Virus Protection

Virus protection can be added to the MarketDirect StoreFront server as an additional measure of security if you cannot be sure that all print buyers who submit documents are running virus protection software. Virus protection software is not provided by EFI, but can be installed at your discretion. EFI cannot guarantee that MarketDirect StoreFront functions correctly with all virus protection software.

MarketDirect StoreFront Licensing

For a customer-hosted system, MarketDirect StoreFront licensing is done through a USB dongle and license string. The USB dongle must be available to the software at all times to ensure uninterrupted availability.

Customer-Hosted Sales Order Components

1. EFI MarketDirect StoreFront Licensing Fee

This one-time fee covers the purchase of the product.

2. Installation, Configuration, and Training

These services are available from EFI Professional Services.

3. MarketDirect StoreFront Maintenance Fee

This is a yearly maintenance fee, and includes access to updates and upgrades for the EFI MarketDirect StoreFront software.

Customer-Hosted Product Upgrades and Updates

PrintMessenger updates

From time to time, a new version of PrintMessenger is released. You can notify print buyers of the availability of a new driver via email.

Centralized IT departments can use MSI scripting and Microsoft Windows Update functionality to push new versions of PrintMessenger to print buyers' desktops.

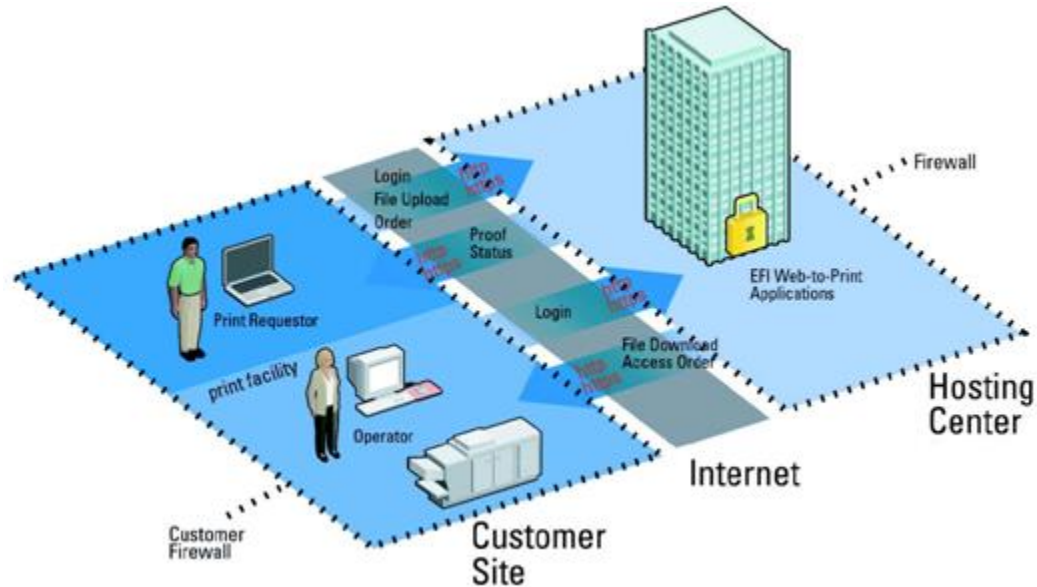
MarketDirect StoreFront server update and upgrades

New releases, updates, and hot fixes for MarketDirect StoreFront are available on a regular basis. Be sure to stay informed about these so your software stays current.

Note When MarketDirect StoreFront is customer-hosted, upgrades are your (the licensee's) responsibility.

MarketDirect StoreFront in the Cloud

When you use MarketDirect StoreFront in the cloud, you can provide Web-based services to your print buyers without investing in any hardware on your premises. The MarketDirect StoreFront application runs in a hosting facility (either at EFI or at a SunGard facility). The entire system is accessed by administrators, print operations personnel, and print buyers via the Internet.



Hosting Facilities

MarketDirect StoreFront runs in hosting facilities in the US and Europe.

- In the US, the primary facility is at EFI, Pittsburgh, PA; the secondary facility is at SunGard Chicago, Wood Dale, IL.
- In Europe, the primary facility is at SunGard London Technology Center, Hounslow, Middlesex, UK; the secondary facility is at SunGard TC2 London East, London, UK.

Access to MarketDirect StoreFront is not limited to a specific number of print buyers (users) at one time, nor is a site limited to a specific number of print buyers or accounts.

Print buyers and administrators access MarketDirect StoreFront through a supported Web browser. For the latest supported browsers, see the *MarketDirect StoreFront Release Notes*.

EFI employs numerous mechanisms to ensure the highest possible security, access, and uptime for your MarketDirect StoreFront application and data.

Physical security

Access to the hosting facilities is strictly controlled and monitored, for example, through security cameras, alarms, proximity access systems, and security guards.

Environment and power

Hosting facilities include temperature and humidity controls, fire detection and sprinkler systems, UPS units to condition power, backup generators, and redundant systems.

Communications

Each hosting facility has multiple access entry points for routing data, as well as access to multiple communications providers (ISPs) to allow load balancing. In addition, the ability to disconnect from one ISP (in case of an attack) provides an additional element of security.

A highly-virtualized, monitored, and redundant cloud environment allows EFI to deliver seamless service of a hosted application such as MarketDirect StoreFront.

Production networks are isolated from EFI corporate networks as well as the public Internet. Such a design is sometimes called a DMZ (for “demilitarized zone”). EFI secures resources and information assets based on a number of criteria using segregated networks.

Site and fault monitoring

Operations are constantly monitored. Operations personnel are notified immediately of conditions that could impact service. Additionally, the application itself reports errors via email. The types of monitoring range from “ping and pipe” on ISP connections and servers to a user experience test on each server. Monitoring tools regularly log into the Web site (on each server), navigate through screens, and log out to ensure timely and accurate performance. An escalation process is in place to ensure that all alerts are resolved efficiently.

Network systems, including providers, firewalls, load balancers, and switches, are configured redundantly. Fault-tolerant servers are used throughout. Hardware load balancers allow the use of multiple Web and application servers to provide rapid recovery from failures (i.e., if a fault-tolerant server fails or needs to be taken out of service). Database systems use highly redundant and fault-tolerant hardware and clustering technologies.

Backups

EFI uses a number of backup procedures to ensure the availability of the site. Data backups occur nightly. Copies of backups are stored offsite at a suitable third-party facility. Secure transmission occurs immediately to disk-based backup appliances which allow for speedy recovery.

Anti-virus controls

The EFI hosting facilities include border firewalls; intrusion detection systems; real-time central analysis of system logs; router access control lists; active virus filtering at the corporate border; anti-virus software deployed on all production, management, and pre-production systems; automatic pattern file updates; and centralized virus reporting (including 24/7 alerts via email and pager). In combination, these measures allow real-time situation handling on all common channels of propagation.

Note For more information about security, see the *EFI Hosting Security White Paper*.

Remote Print Center

Remote Print Center (RPC) is a specialized application that allows files (such as job tickets, content files uploaded by print buyers, and so on) to be output to a computer in another domain. By default, such files are stored locally on the MarketDirect StoreFront server, but if a firewall prevents normal file sharing, you can use RPC tools to designate a remote client computer to which the MarketDirect StoreFront server can deliver files on-demand.

For RPC installation requirements, see the latest *MarketDirect StoreFront Release Notes*.

When your MarketDirect StoreFront site is in the cloud (hosted by EFI) or is customer-hosted outside the print production facility’s network, RPC makes an end-to-end workflow possible, with, for example, job tickets and files being transferred directly to EFI Fiery® controllers, Fiery Central, or MicroPress®.

Note For sites with workflows that print files exclusively from the PDF link on the ticket, Remote Print Center is *not* required.

The RPC Connector is responsible for coordinating activity between the client computer and the MarketDirect StoreFront system at the hosting site. For example, a print buyer visits the print shop’s Web site (in the cloud), uploads a content file, specifies print and finishing options for the job, and pays for the job by credit card. All of these activities occur on the EFI servers and are thus invisible to the print shop. RPC delivers the customer’s uploaded file and the job ticket to the print shop’s file system. The print shop then prints and finishes the job and delivers it to the customer.

RPC requires no “dongle” or separate activation upon installation. The core MarketDirect StoreFront setup includes RPC for the main print location.

PDF Conversion Server

Server-side PDF conversion is available for cloud deployments.

MarketDirect StoreFront Activation and Subscription

For a cloud deployment, MarketDirect StoreFront is accessed via the Internet.

Cloud Sales Order Components and Process

Components

1. MarketDirect StoreFront Activation Fee

This one-time fee covers establishing the physical site in the hosting facility, configuring the site for the modules required, creating the URL site address, and custom branding the site.

2. Installation, Configuration, and Training

These services are required for MarketDirect StoreFront cloud sales, and must be performed by EFI Professional Services.

3. MarketDirect StoreFront Subscription Fee

This is a yearly hosting fee, and includes access to the site together with all the standard features of MarketDirect StoreFront. MarketDirect StoreFront comes with unlimited “storefronts” to configure the default look and feel for the site and 20 GB of file storage space. MarketDirect StoreFront also has several optional modules for additional subscription fees. For information, see “MarketDirect StoreFront Optional Modules” on page 27.

Cloud Product Support, Upgrades, and Updates

Support

Phone support through EFI is included as part of the MarketDirect StoreFront subscription fee. Hours of operation are Monday–Friday 8:00 a.m. to 8 p.m. Eastern time. An annual optional upgrade to 24/7 phone support is available.

Upgrades and updates

Updates, upgrades, and other revisions to MarketDirect StoreFront are provided at no additional charge and are included in the subscription fee. Your site administrators are notified via email of any software changes prior to the update or upgrade being made.

MarketDirect StoreFront Optional Modules

Several optional modules – requiring additional licensing – are available for MarketDirect StoreFront.

Credit Card Payment Gateway Module

This module allows print buyers on a MarketDirect StoreFront site to send their credit card information via an SSL-encrypted connection and receive authorization through one of the MarketDirect StoreFront supported payment gateways (for example, Payflow Pro, Payflow Link, CyberSource, PayPal WebSite Payment Pro). You must establish your own relationship (merchant account) with the payment gateway. When MarketDirect StoreFront is customer-hosted, you must also obtain and install an SSL certificate.

Authentication Package

You can use Active Directory authentication or login bypass with MarketDirect StoreFront. For more information, see “User Management and Authentication” on page 14, as well as the *MarketDirect StoreFront Authentication White Paper*.

Entities

Entities are building blocks in MarketDirect StoreFront for defining organizational structure. Entities offer a top-down, multi-level approach to sharing (or not sharing) products, media, storefronts, pricing, print shops, etc., within a single MarketDirect StoreFront installation. For example, a service business typically includes many discrete client companies with unique Web-to-Print needs. By making each client company an entity, you make it possible for the client companies to co-exist in a single instance of MarketDirect StoreFront while sharing some things but not others.

Design Studio

Design Studio is a Web-based product design tool built into MarketDirect StoreFront. Using this tool, a print shop creates templates for products such as greeting cards, flyers, business cards, brochures, stationery, banners, and so on.

When print buyers order a Design Studio product they personalize it using a visual editor, for example, add their own photos and text; make formatting changes; or re-size, rotate and move objects. Print buyers can see the effects of their changes as they make them.

VDP Products: EFI VDP

EFI VDP lets you offer personalized and versioned print products that can include personalized images (separately licensed), as well as direct mail products for mailing campaigns. (Direct mail requires you also to have an AccuZIP account that is configured in MarketDirect StoreFront. Direct mail can be used only within the U.S.) You can also be licensed for *cross media marketing (CMM)* so you can create campaigns for increasing sales, marketing your services, offering time-limited discounts, announcing promotions, and so on.

VDP Products: XMPie

You can offer personalized and versioned print products via the XMPie® software. As a plug-in to Adobe® InDesign®, XMPie allows seamless integration within the design environment to exploit InDesign’s full creative capabilities.

VDP Products: FusionPro

You can offer personalized and versioned print products via the FusionPro® VDP Suite. Templates are designed with FusionPro via a plug-in to Adobe® Acrobat®.

EFI MIS Connector

The EFI MIS Connector allows integration between MarketDirect StoreFront and a supported EFI print MIS such as Monarch, Pace, or PrintSmith Vision.

Enhanced integration between MarketDirect StoreFront and an MIS is available if you also purchase a license for Fulfillment in MarketDirect StoreFront. (Not every MIS supports fulfillment.) Fulfillment orders are orders for products that already exist (known as *non printed products* in MarketDirect StoreFront) – in contrast to print orders that result in jobs being produced according to print specifications provided by a buyer.

External Systems Connector

The External Systems Connector for MarketDirect StoreFront uses generic XML to pass job order information to third-party systems.

Extended Applications

When you are licensed for extended applications, MarketDirect StoreFront can pass user credentials to both EFI and non-EFI third-party external applications. The external application is then presented in a window within MarketDirect StoreFront. For example, you could have an external application such as an MIS or a print business management system (such as PrintStream®) displayed in a MarketDirect StoreFront window.

Note Data is not communicated between MarketDirect StoreFront and the external application.

Print Shops

Additional print shops make it possible for you to support more than one print center (production facility) from within the same system. For example, your printing enterprise may include multiple retail locations or multiple production facilities on a campus or across the country, all of which can be managed from a single server.

20 GB Enterprise Storage

If you are using MarketDirect StoreFront in the cloud, additional data storage is available in 20GB increments.

Summary

The information provided in this document is designed to provide general guidelines for MarketDirect StoreFront configurations and may be changed or updated from time to time as EFI releases new versions of the software. For more information about MarketDirect StoreFront configuration options, deployment configurations, and additional capabilities, contact an EFI sales representative.