

MVSWeb™ Online Document Access System for Profits Plus™

1 Background

The MVSWeb™ Online Document Access System for Profits Plus™ (ODAS) is a web-based application that is part of the MVSWeb suite of applications whose primary function is to give internal users (company employees, consultants, accountants, etc.) and external users (customers and partners) read-only access over the web to scanned or electronically generated images of documents such as invoices and checks. It also includes online statement and order history lookups directly from the Profits Plus™ ERP system. In 2009 the system was enhanced to provide users the ability to see all the payments received by the company from a specific customer.

The business objective in creating this system is to minimize the number of phone calls that occur when customers need copies of documents such as invoices, look at their payment records, or want to review their account information.

The application is developed using web-based technology so as to make it accessible using a standard Internet Web-browser available both internal to the organization and externally via the Internet. One of the major enabling components is the MVS-UDA (Universal Data Access) component developed by MVS Alliance for access into Profits Plus™ information.

2 Features and Screens

2.1 Feature List

2.1.1 Online document search and display

As part of the document search and display, the system allows the user to select a specific document type from the online archive. Depending on the security attributes of the user that has logged in, the application may allow the selection of a specific company and/or customer as criteria for document access.

The following scenarios describe the types of user interactions that occur in the system:

2.1.1.1 External user access

In this scenario, a user outside the company accesses the system over a web-browser across the Internet. Upon accessing the system the user is presented with a login screen. The login screen is customized with the company's logo and a welcome message that is edited in the configuration page of the application. The user then enters a pre-assigned username and password. If accepted, the user is presented with the "Document Search" screen.

Profits Plus™ supports multiple companies within each installation. Furthermore, it is possible that an individual user may have customer accounts at more than one company within a single installation. The application supports this possibility by allowing a single user account association with multiple Profits Plus™ companies. If this is the case, a user must select the correct company from the company list drop-down in the "Document Search" screen before proceeding with any search. Nonetheless, in most installations there is only one company so the selection is automatically set.

In the case of invoices or payments, the user selects a company if applicable, and may choose to change the default date range of the past three months before submitting the search. The system

queries the database and presents the “Document List” screen which contains a list of the invoices or payments that fit the criteria specified by the user.

Each line in the list contains a visual indication as to the presence of an image file for that invoice in PDF format. If a document exists, the user can click a button that opens up a new screen that displays the corresponding image. Since the presented image is in standard web-browser screen, the user can now do whatever she pleases with this image such as printing, faxing or emailing it at this time.

Specifically for payment lookups, users are shown all the invoices that each payment that is recorded within that time period has paid. Each invoice can be viewed as a PDF document if one exists in the image folder. Finally, if a payment is made in the form of a check, as most payments would be, these can be scanned and also saved in a folder so that users can view those as well.

If the user selects statements, the date is not a relevant field, and when the search is submitted, a real-time view of the current statement of the account is presented. Statement views show exactly the same list of transactions in the screen as would be seen by the user if they performed a customer inquiry within the “Accounts Receivable” module in Profits Plus™. These transactions are typically invoices and payments. Just as in the case of the invoice look-up described earlier, all invoices that have valid PDF image files are indicated visually as links on the list entry. These links will also display the invoice images as described earlier.

2.1.1.2 Internal user access

In this scenario, a user within the company accesses the system over a web-browser across the Intranet of the company. Upon accessing the system the user is presented with a login screen. The user then enters a pre-assigned username and password.

If accepted, the user is presented with the “Document Search” screen. Since this is an internal user, the “Document Search” screen will be slightly different in that it will contain an area in which the user can select a specific customer record by name for a specific company in the Profits Plus™ system.

Before searching for a specific customer, the user must select the appropriate company from the company list if applicable.

A customer search is performed very simply typing into the customer search text box. As the user starts typing, the system narrows down the corresponding choices until the displayed list is short enough list for the user to select the correct customer. The list also displays the customer number to make the selection process simple and efficient.

Upon selecting the customer, the user selects the type of document to search within a certain date range if applicable as in the scenario above for external users. From this point onwards the two scenarios are the same.

On the “Document Search” screen, depending on the security attributes of the user, she may see three additional links:

1. MVSWeb Configuration
2. Missing Invoices
3. User Administration

2.1.2 MVSWeb Configuration

An internal user with administration privileges can access this feature to manage the installation specific configuration details such as company lists, welcome message, company logo, and other technical

specifications. An end-user does not require access to this and this part of the application is typically not changed very frequently.

2.1.3 User administration

An internal user with administration privileges can access this feature to create and manage user records.

It is also used to manage the associations between user accounts and companies in the Profits Plus™ application.

2.1.4 User context recognition

The system has the ability to automatically determine the context of the specific user logged in by using the data saved in the user administration module. This enables the “Document Search” screen to add the “Company Selection” and “Customer Search” areas as required.

2.1.5 Missing document notification

The system can optionally generate a daily report of all the invoices or checks that exist in the Profits Plus™ system but do not have a corresponding scanned image.

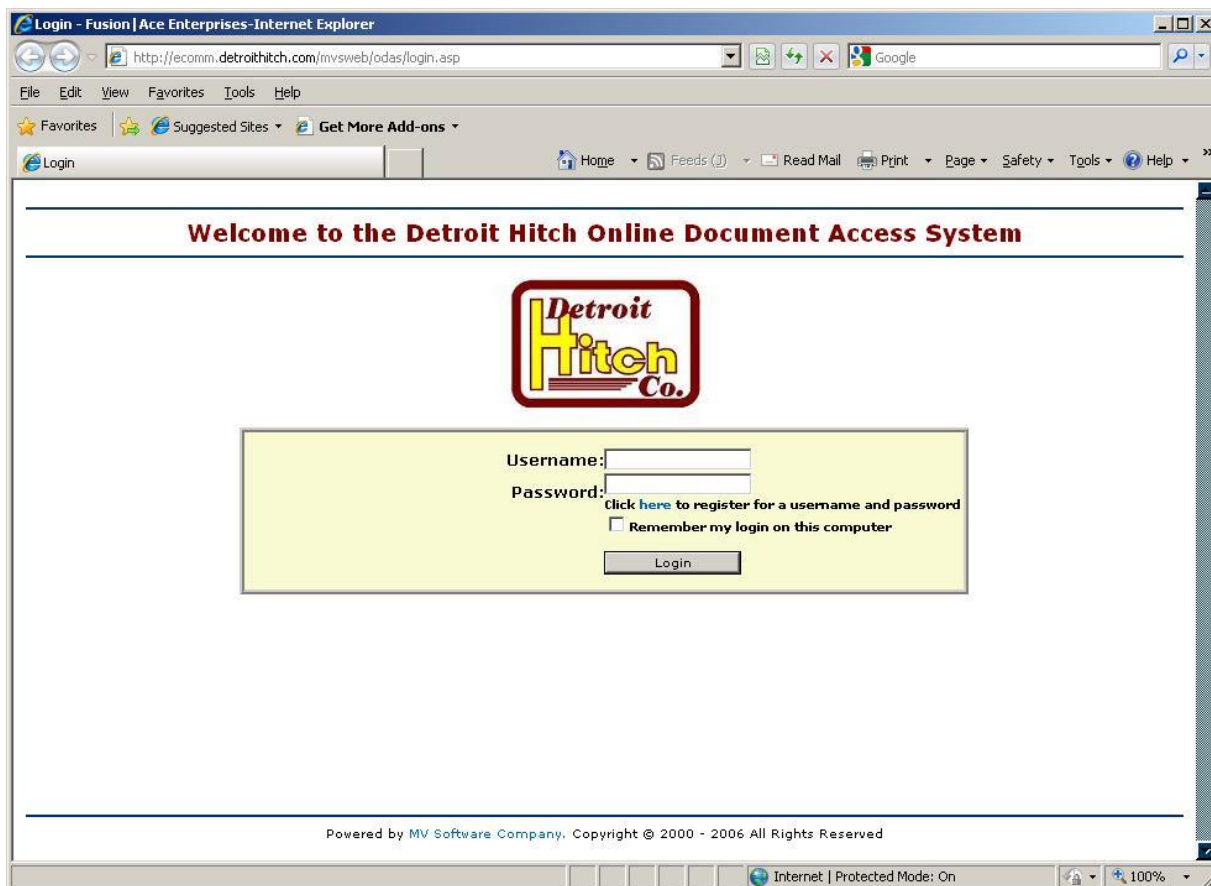
The notification is in the form of a text file attached to an email message. Users can specify the number of days in the past within which to look for missing invoice images.

2.2 Screens

This section contains screen layouts for the user interface into the system.

2.2.1 User Login

This is the starting screen that is presented to the user when they access the URL (Web-address) of the application in their browsers. The login screen contains two fields, “Username” and “Password” as is seen in most applications as shown below:



2.2.2 Document Search

This screen has two different appearances depending on the context of the user that is accessing it.

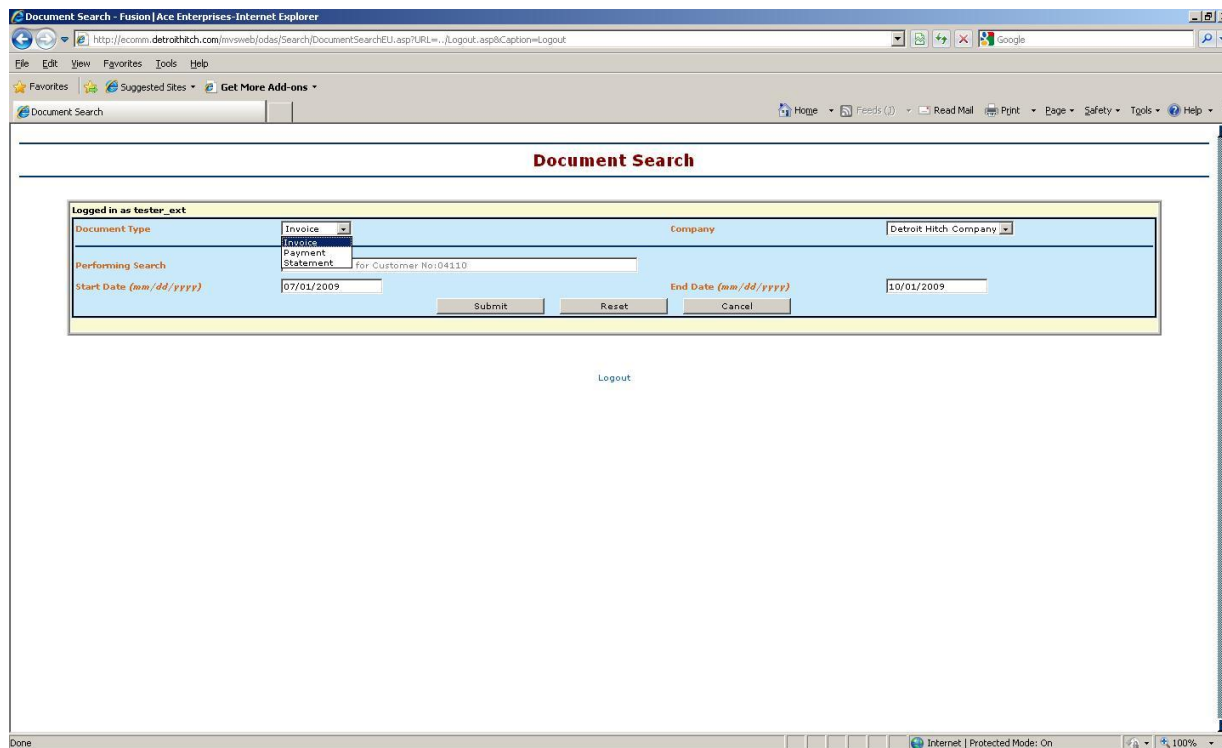
2.2.2.1 External User Context

When an external user logs in, the system automatically displays to the user the “Document Search” screen with the external user context. This screen displays the name of the user as stored in the “Users” table in the database.

The system provides the user the ability to select a “Document Type”, and a “Company”. The “Company” list contains all the Profits Plus™ companies with which the end-user’s company does business, and would thus be associated with user’s account on the system. Note that a company may do business with multiple companies in a single Profits Plus™ installation.

The system however, will only display in this list the companies that pertain to the user who has logged in. This means that it is very likely for the drop-down list on this screen to contain a single entry.

Following is an image of the “Document Search” screen for an external user.



2.2.2.2 Internal User Context

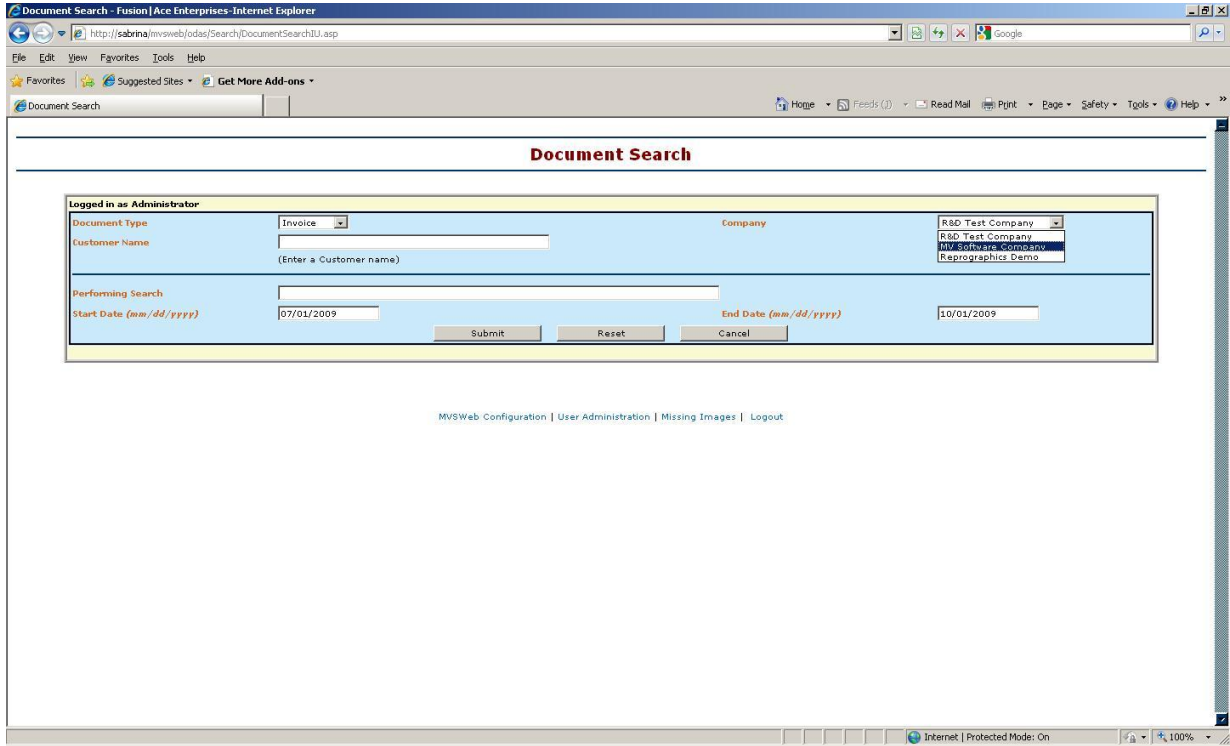
When an internal user logs in, the system automatically displays to the user the “Document Search” screen with the internal user context. In this case as well the screen displays the name of the user as configured in the “User Maintenance” screen for this user account.

In addition to the fields displayed in the external user context version of this screen, the system also displays a customer field. The rich user interface enables users to begin typing a customer name and as more letters are added to the name entered, a list that appears immediately narrows down the search options for the end user until the list is sufficiently short for the user to select the desired customer.

Finally, depending on the security attributes of the user, the screen shows three links at the bottom:

1. ODAS Configuration
2. User Administration
3. Missing Images

Following is an image of the “Document Search” screen for an internal user with all privileges.

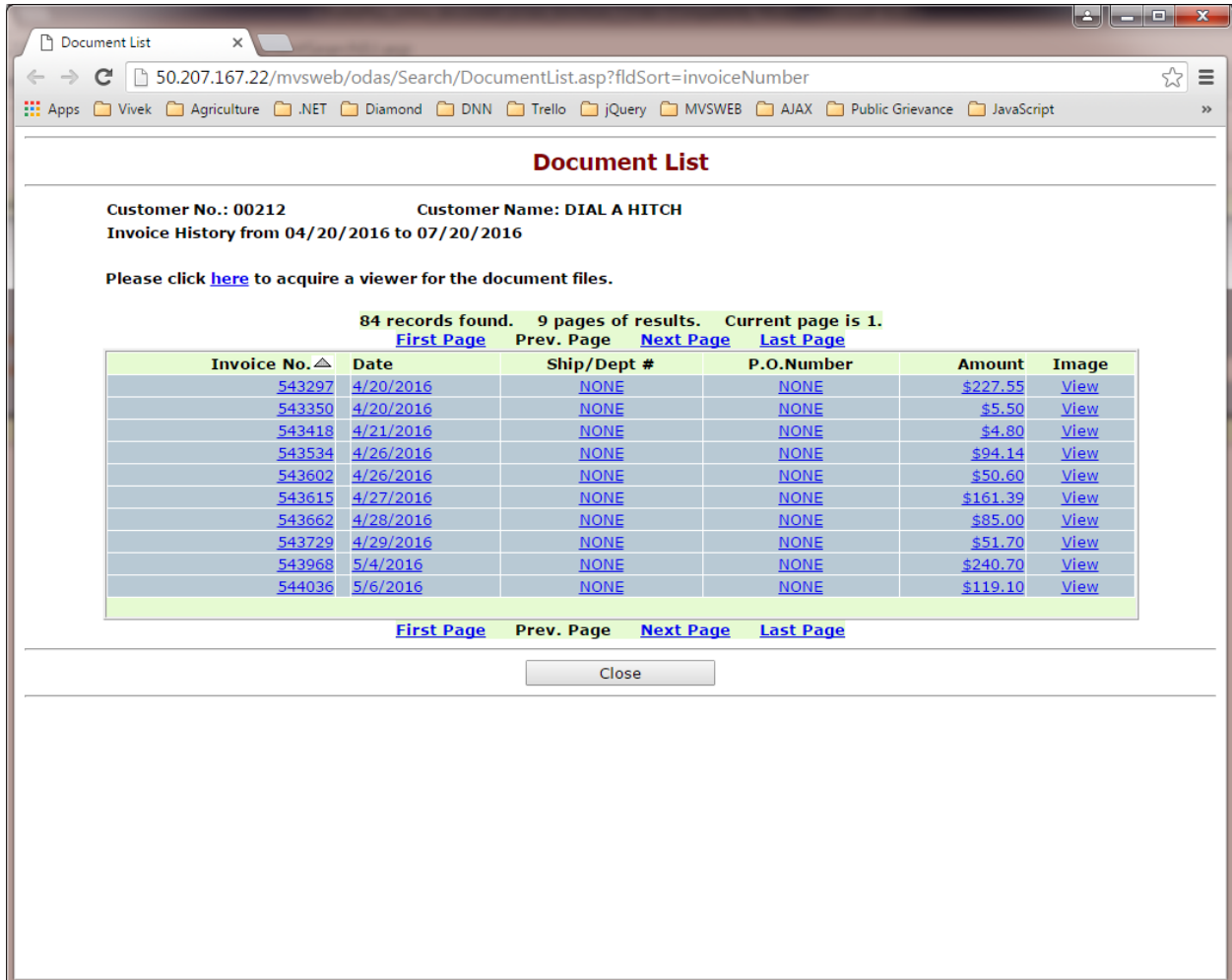


2.2.3 Invoice List

The “Document List” screen displays all the valid invoices that match the criteria given in the “Document Search” screen. This screen opens up in a new browser window. The detail provided in the list matches the type of document that is selected for the search. Each entry in the detail screen indicates whether an image for that entry exists in the folder configured in the application.

The scanned image for a particular entry can be viewed by clicking the corresponding hyperlink in the list. If an image does not exist for a particular invoice, the hyperlink will not appear.

Following is an image of this screen:



Ship/Dept # and P.O. Number fields displayed in the image are optional fields. User can choose to display both/single/none fields in place of these two fields of her choice.

2.2.4 Invoice Preview

Upon selecting an invoice to view, the system opens up a new browser screen on the user's PC containing the image of the document. At this point the user may print, fax, or email the document using standard browser functionality.

The images may be scanned as TIFF or PDF documents so virtually any browser embedded viewer such as "Alternatiff" (www.alternatiff.com) for TIFF files or Adobe Acrobat Reader would be suitable for viewing scanned invoices.

Most such viewers support a "Print" function which can be used to send this to a printer or to a FAX server on the network. Hence the options as to what to do with the image are quite limitless at this point.

651 ROCHESTER ROAD
CLAWSON, MI 48017-1789
248-583-4112 (800) 424-5232
FAX 248-589-5250
Website: www.detroit hitch.com
Email: dhsales@detroit hitch.com

INVOICE #: 463905 RE-INVOICE
DATE: 07/02/09
SLSPER: CHRIS E PAGE 1

BILL TO: 980
GENERAL RV CENTER, INC.
48500 12 MILE RD.
WIXOM MI 48393

SHIP TO: 30000
*** MT. CLEMENS GENERAL *
24583 N. RIVER ROAD
MT. CLEMENS MI 48043

SHIP TO PHONE # : (586)954-3600 UPS: 2 ROUTE: N. EAST

QUAN ORDERED	SHIPPED	BACK ORDERED	PART NUMBER	DESCRIPTION	COST \$ EACH	NORMAL \$ TOTAL	NET \$ TOTAL
1	1		754-3315	PR FRAME BKTS. SGLIDE JR GM Tech#: 8 CHRIS ENGLISE FITS: 2001 GM PICKUPS PULLRITE #3315	269.05		269.05

@@ An additional 2.9% will be charged on all American Express transactions @@

2.2.5 Check List

Similar to the Invoice List, the check list displays all the payments that have been received by the company within the date range entered on the search screen. If the payment is a check, then this can also be scanned and saved as a PDF file in the folder.

Following is an image of the Payment List screen.

Check List

Customer No.: 00980 Customer Name: GENERAL RV CENTER, INC.
 Check History from 07/01/2009 to 10/01/2009

Please click [here](#) to acquire a viewer for the document files.

15 records found. 1 pages of results. Current page is 1.
[First Page](#) [Prev. Page](#) [Next Page](#) [Last Page](#)

Check No.	Date Received	Amount	Image	
241915	9/29/2009	\$1,091.19	Not Available	
241769	9/25/2009	\$1,285.84	Not Available	
241380	9/18/2009	\$580.50	Not Available	
241078	9/9/2009	\$14.39	Not Available	
240828	9/3/2009	\$1,251.92	Not Available	
240548	8/28/2009	\$892.27	Not Available	
6614	8/28/2009	\$63.40	Not Available	
240351	8/26/2009	\$581.37	Not Available	
239991	8/19/2009	\$1,343.32	Not Available	
239710	8/12/2009	\$44.70	Not Available	
Invoice No.	Date	P.O. No.	Amount	Image
465061	7/29/2009	103132	\$125.85	Not Available
Note: Check Amount is less than Invoice Totals by \$81.15				
239068	7/31/2009		\$1,934.61	Not Available
238709	7/23/2009		\$926.25	Not Available
238366	7/15/2009		\$749.71	Not Available
238021	7/13/2009		\$733.86	Not Available
Invoice No.	Date	P.O. No.	Amount	Image
463363	6/23/2009	14151	\$576.60	View
463456	6/24/2009	66024	\$80.00	View
463458	6/24/2009	66019	\$77.26	View
237666	7/2/2009		\$2,667.50	Not Available

[First Page](#) [Prev. Page](#) [Next Page](#) [Last Page](#)

Close

Internet | Protected Mode: On

2.2.6 Statement view

The statement view is a real-time look-up from the Profits Plus™ system providing an up to date view of all the transactions such as invoices, payments, credit memos, etc., and a current balance for a particular customer account. The system has the ability for users to make payment against all or specific invoices using secure credit card payment gateway (feature included in 2016).

Following is an image of the statement screen:

Document List x

50.207.167.22/mvsweb/odas/Search/StatementwithPayment.asp?fldSort=documentType

Apps Vivek Agriculture .NET Diamond DNN Trello jQuery MVSWEB AJAX Public Grievance JavaScript

Statement

Customer No.: 00212 **Customer Name:** DIAL A HITCH
Account Status As of 7/20/2016

Account Total : **\$6,488.51**
 602.92

42 records found.

<input type="checkbox"/>	Document	Date	Reference	Document Type ^	Amount	Applied To	Check No
<input type="checkbox"/>	547324	7/12/2016	NEW RETURN	Credit Memo	(\$221.95)	000000	0
<input type="checkbox"/>	547323	7/12/2016	NEW RETURN	Credit Memo	\$.00	000000	0
<input type="checkbox"/>	547019	7/5/2016	NONE	Invoice	\$96.65		0
<input checked="" type="checkbox"/>	546990	7/5/2016	NONE	Invoice	\$197.05		0
<input type="checkbox"/>	546891	6/30/2016	NONE	Invoice	\$10.75		0
<input type="checkbox"/>	546890	6/30/2016	NONE	Invoice	\$16.65		0
<input type="checkbox"/>	546818	6/30/2016	NONE	Invoice	\$7.80		0
<input checked="" type="checkbox"/>	546880	6/30/2016	NONE	Invoice	\$9.00		0
<input type="checkbox"/>	546811	6/29/2016	NONE	Invoice	\$30.60		0
<input checked="" type="checkbox"/>	546750	6/29/2016	NONE	Invoice	\$6.20		0
<input type="checkbox"/>	547028	7/6/2016	NONE	Invoice	\$163.65		0
<input type="checkbox"/>	547617	7/15/2016	NONE	Invoice	\$257.10		0
<input checked="" type="checkbox"/>	547531	7/14/2016	NONE	Invoice	\$16.75		0
<input type="checkbox"/>	547477	7/14/2016	NONE	Invoice	\$128.45		0
<input checked="" type="checkbox"/>	547330	7/12/2016	NONE	Invoice	\$3.67		0
<input type="checkbox"/>	547325	7/12/2016	NONE	Invoice	\$3.95		0
<input checked="" type="checkbox"/>	547076	7/6/2016	NONE	Invoice	\$14.40		0
<input type="checkbox"/>	547322	7/12/2016	JERRY	Invoice	\$182.19		0
<input type="checkbox"/>	547144	7/7/2016	NONE	Invoice	\$9.40		0
<input checked="" type="checkbox"/>	547138	7/7/2016	NONE	Invoice	\$355.85		0
<input type="checkbox"/>	546737	6/28/2016	NONE	Invoice	\$9.00		0
<input type="checkbox"/>	546667	6/27/2016	NONE	Invoice	\$673.95		0
<input type="checkbox"/>	545666	6/8/2016	NONE	Invoice	\$266.64		0

Simple Payment Form De X

50.207.167.22/mvsweb/secureP/hpstr.asp?amount=602.92

Apps Vivek Agriculture .NET Diamond DNN Trello jQuery MVSWEB AJAX Public Grievance JavaScript

Secure Payment

Billing Information	
First Name	Kevin
Last Name	Flynn
Phone Number	5555555555
Email	example@example.com
Address	one heartland way
City	jeffersonville
State	Indiana
Zip	47130

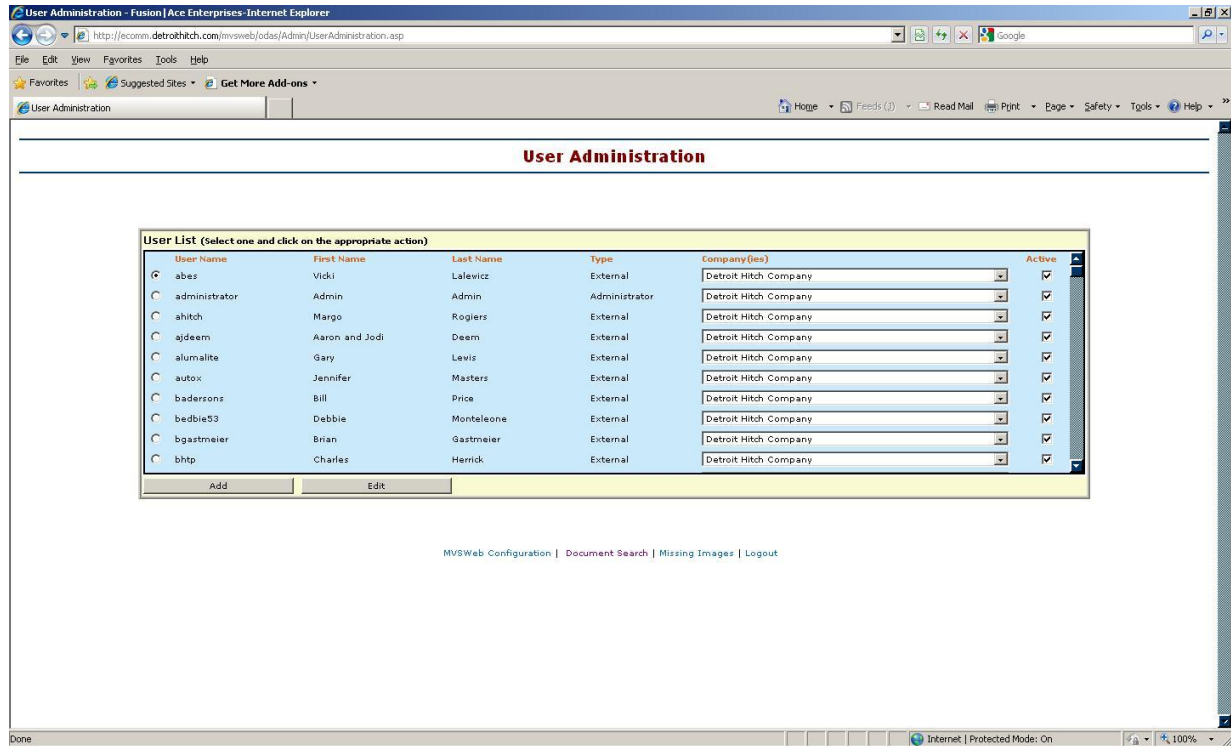
Card Information	
Card Number	4012002000060016
Expiry Date	12 / 2020
CVC	123
Charge Amount	602.92

Autofill Form Clear Form Submit Payment Close

2.2.7 User Administration

This screen is available only to internal users with administration privileges. It is used to create and administer user accounts. A user can add, modify or delete user accounts using the buttons provided.

Following is an image of the screen:



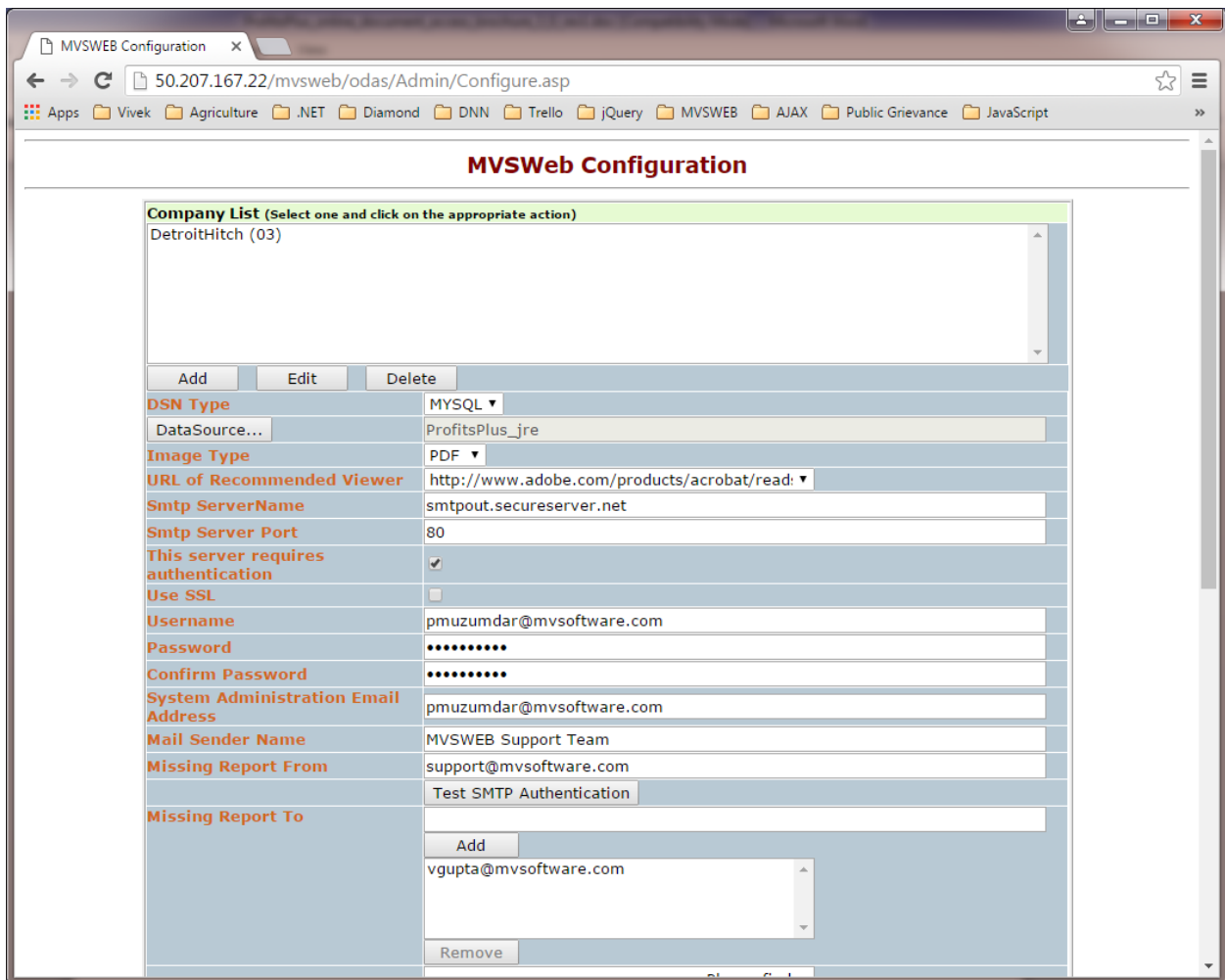
2.2.8 User Maintenance

This screen is used to create new user accounts or modify existing user accounts in the system. In addition to a username, password, first name and last name, the user account can be associated with one or more Profits Plus™ company.

Following are images of the User Maintenance and the Customer Association screens:

2.2.9 Configuration

This screen is used to modify system level configuration details such as database information, company names, email addresses for notification, etc.



The screenshot shows a web browser window with the URL `50.207.167.22/mvsweb/odas/Admin/Configure.asp`. The page title is "MVSWeb Configuration".

Company List (Select one and click on the appropriate action)

DetroitHitch (03)

Buttons: Add, Edit, Delete

DSN Type: MySQL

DataSource...: ProfitsPlus_jre

Image Type: PDF

URL of Recommended Viewer: `http://www.adobe.com/products/acrobat/read:`

Smtp ServerName: smtpout.secureserver.net

Smtp Server Port: 80

This server requires authentication:

Use SSL:

Username: pmuzumdar@mvsoftware.com

Password: [masked]

Confirm Password: [masked]

System Administration Email Address: pmuzumdar@mvsoftware.com

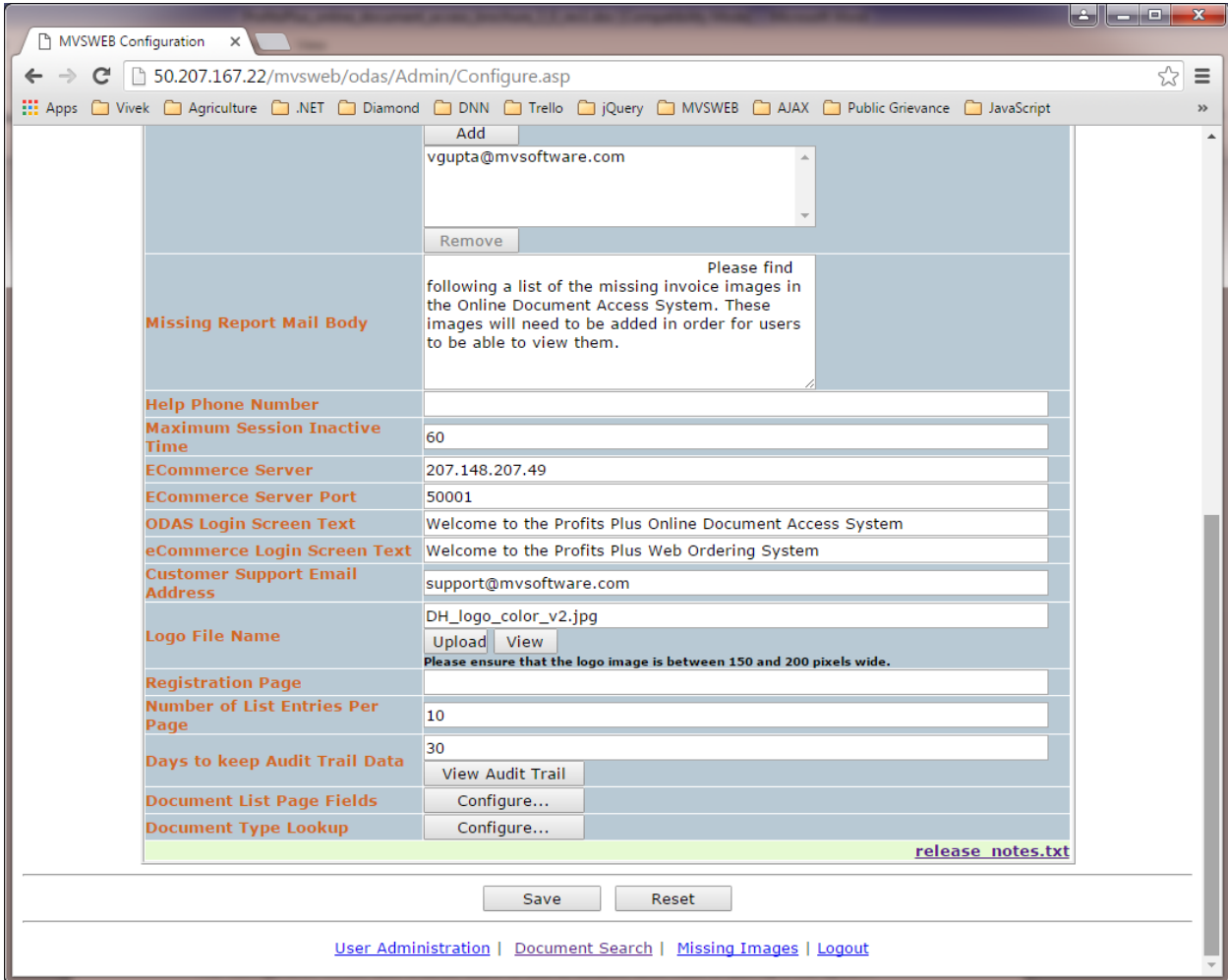
Mail Sender Name: MVSWEB Support Team

Missing Report From: support@mvsoftware.com

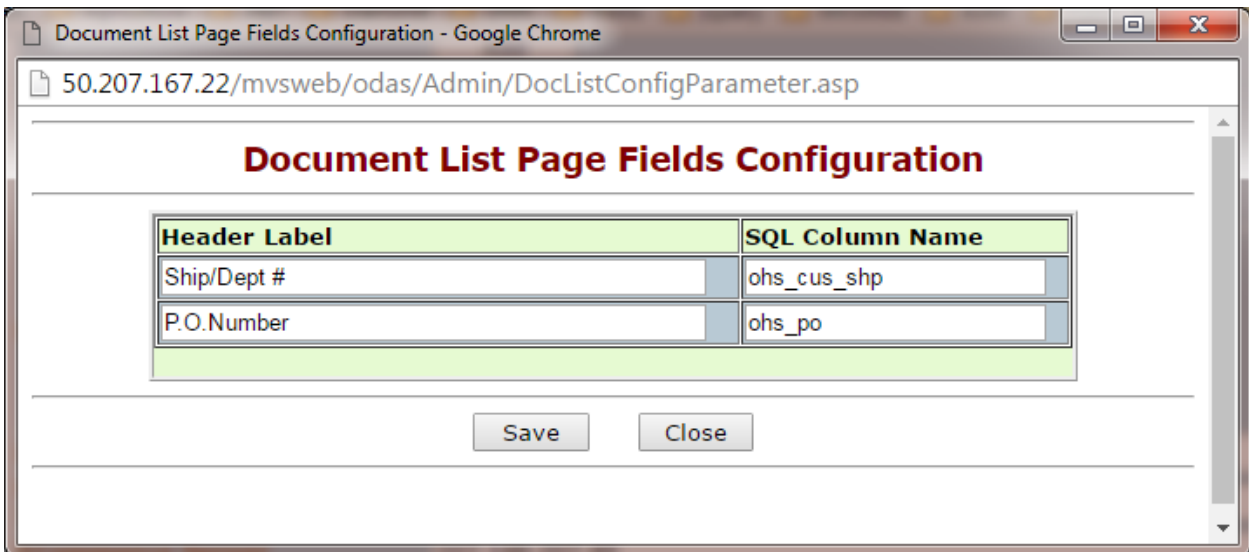
Missing Report To: Test SMTP Authentication

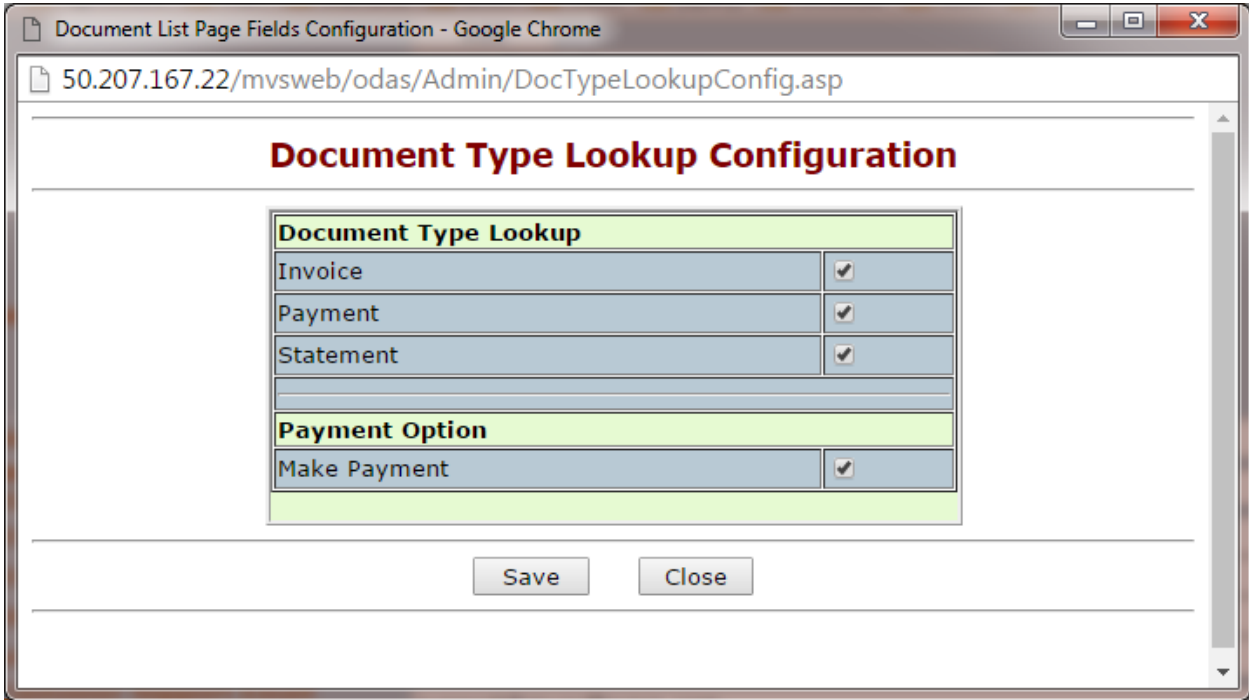
Buttons: Add, Remove

Additional email address: vgupta@mvsoftware.com



The configuration screen enables users to configure Invoices look up page fields and enable/disable secure payment facility for invoices.





The configuration screen also enables users to look at detailed audit trails of activity in the system.

Following is an image of the Audit Trail screen:

Audit Trail - Fusion | Ace Enterprises - Internet Explorer

http://ecom.detroit-hitch.com/mvsweb/odas/Admin/AuditTrail_Cont.asp?Days=10

Audit Trail Data

View by User: All Records

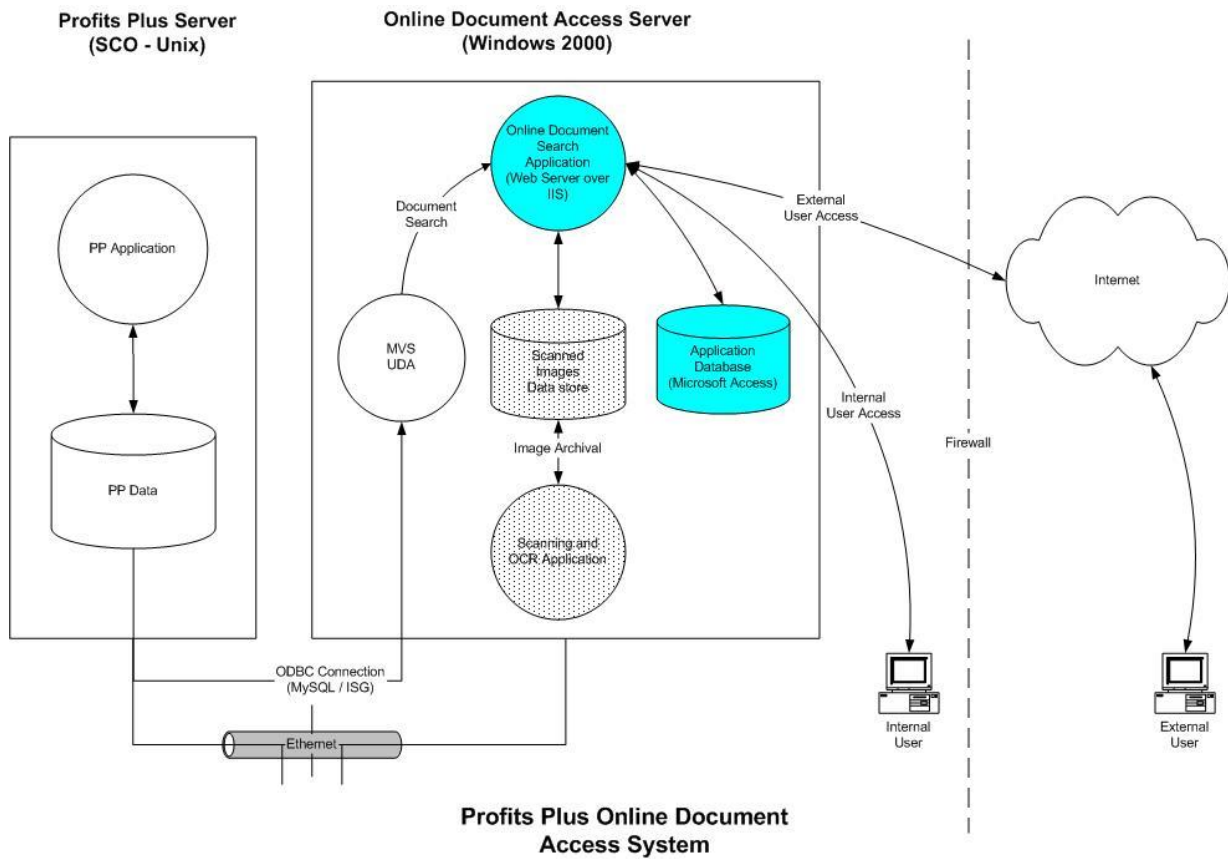
View Close

User Name	Session ID	Date-Time	Entry Type	Detail
administrator	557740497	10/1/2009 12:00:58 AM	ODAS Login	User Logged in
tester_ext	557740497	9/30/2009 11:58:37 PM	ODAS Logout	User Logged out
tester_ext	557740497	9/30/2009 11:56:56 PM	ODAS Login	User Logged in
ctech	255875484	9/29/2009 7:02:54 AM	GetItemInfo	Failed opening socket for address:192.168.100.2:5000 1 (WSAErrorCode=10061)
ctech	255875484	9/29/2009 7:00:21 AM	GetItemInfo	Failed opening socket for address:192.168.100.2:5000 1 (WSAErrorCode=10061)
administrator	437195541	9/24/2009 5:58:32 AM	ODAS Logout	User Logged out
administrator	437195541	9/24/2009 5:54:56 AM	ODAS Login	User Logged in
gpolley	298070155	9/23/2009 11:17:29 AM	CreateOrder	Failed opening socket for address:192.168.100.2:5000 1 (WSAErrorCode=10061)
gpolley	298070155	9/23/2009 11:04:58 AM	GetItemInfo	Failed opening socket for address:192.168.100.2:5000 1 (WSAErrorCode=10061)
gpolley	298070155	9/23/2009	GetItemInfo	Failed opening socket for address:192.168.100.2:5000

Done Internet | Protected Mode: On 100%

3 System architecture and technology

3.1 System Architecture Diagram



3.2 Core Application Components

Please refer to the architecture diagram above. These components are shown in teal.

3.2.1 Online Document Access Application

This is the heart of the system and encapsulates the functionality and features of the system. It is a web-accessible application installed over Microsoft Internet Information Services.

3.2.2 Application Database

The database of the application is implemented using Microsoft Access. It stores information about users, the companies in Profits Plus™ with which they are associated and other application specific information.

3.3 Other Systems, Components and High-Level Integration Requirements

3.3.1 Profits Plus™ Application

This is the Profits Plus™ ERP application developed by MVS Alliance installed on a Windows® or SCO-UNIX® server. Profits Plus™ data is accessed by the MVS UDA application over the Ethernet backbone using ODBC access to connect to a MySQL database server.

3.3.2 MVS-UDA

This is a component also developed by MVS Alliance to provide ODBC access to Profits Plus™ data to third-party applications. The integration between the application and MVS-UDA is described below.

3.3.3 Scanning and OCR Application

This is an external component that is not developed by MVS Alliance. It consists of software and hardware suitable for scanning large numbers of invoices and then storing the scanned images into specific folders for later retrieval. Scanning would be the preferred method of archiving if you want to present “signed” invoices and other supporting delivery & customer documents online rather than just “unsigned” invoices alone.

An important aspect of this component is the OCR (Optical Character Recognition) feature. Software with this capability can recognize the value of text or numbers within scanned image files. This ability is used to store scanned files with names based on specific rules configured in the application.

MVS Alliance can offer scanning as a service to end-user organizations on a case by case basis.

3.3.4 E-form Archival System

Companies that do not wish to use a scanning and OCR application can use the Profits Plus™ E-forms archival system. This add-on application creates and directly stores onto the ODAS server electronic copies of invoices in PDF format. The limitation of this approach is that any signatures on scanned documents are not available. However, the advantage is that the system is completely automated and does not require any human intervention.

3.3.5 Integration Requirements

The application has two major external integration points:

3.3.5.1 Integration with MVS-UDA

The application connects to the MVS-UDA application using a standard ODBC connection. This enables it to perform queries in real-time against Profits Plus™ data.

3.3.5.2 Integration with Scanning and OCR Software - Optional

The Online Document Access Application displays scanned images of documents that end-users wish to see. These images need to be scanned and archived by some external system outside the control of the application.

The integration with the Scanning and OCR Software is of an implicit nature such that scanned files are saved in specific folders with specific rules for file names. The location of these folders and the rules for the file names are configured in the application database.

As mentioned in 3.3.4 above, this piece is optional

3.4 Technology map

This describes the choice of technology for the different tiers and sub-components of the system.

3.4.1 End-user

The application currently supports Internet Explorer (V 5.0 or greater), Firefox (V 3.0 and greater). Support for other browsers can be added as appropriate.

3.4.2 Server

The application is installed on a Windows® 2000/2003/2008 server with a suitable hardware configuration. Some of the other application components are:

- Web server environment: Microsoft® Internet Information Server
- Application server technology: Microsoft ASP.
- Database technology: Microsoft® Access.
- MVS-UDA and related components.