

APPENDIX A

I-Forms Server Setup

Before Getting Started

OneForm Designer Plus creates all of the files needed to deploy Internet forms on UNIX and Microsoft Windows IIS web servers, with enterprise databases such as Oracle 8i/9i, SQL Server 2000, and MySQL. The scripts generated by OneForm Designer Plus self-adapt to the platform and database that they are installed on, allowing testing to be done on a local machine before transferring to a real web server. Although OneForm Designer Plus creates all of the files and scripts needed for I-Forms, you will probably need the assistance of a Webmaster to help setup your Internet Server.

For example, you may need help to create a Document Root location for your I-Forms, or give the CGI scripts executable permissions. Also when connecting to databases through a server, database drivers and logins are an issue. Having the assistance of a Webmaster to help setup the first working I-Form is usually necessary.

When starting a new I-Form, it is best to create a project directory specifically for that particular I-Form. If possible, name the project folder the same as the electronic form source file (ELF). Since many files are automatically generated and will need to be copied over to your Internet server, it is easier just to copy the entire folder to the server's document root.

By default, OneForm Designer Plus creates Perl5 CGI Scripts for a "Generic UNIX Apache Platform" using UNIX pathing. UNIX file naming is case dependent, and because of this, lowercase is required for the names of your I-Form project folders and ELF files. The base name of the ELF file is used to name the CGI scripts and is also used throughout the scripts for database connectivity. Using lowercase letters with no spaces in the file names avoids any file naming problems associated with CGI scripts not locating files because they do not match exactly. These same CGI scripts also work well with Microsoft Windows IIS Servers, see page 266.

Simple testing of the look of the I-Form, and local functions, like calculations and tab ordering, can be done without moving the I-Form to the server. To make sure any images (GIF's or JPEG's) can be found, they should be stored within the project folder.

Basic Steps for Creating an Internet Form

Outlined below are the basic steps for creating a working Internet form. For complete instructions, refer to Chapter 14.

Step 1: Open Sample ELF (A Form with Fillable Form Fields)

Step 2: Add Submit Button and Primary Output Key

Step 3: Reset the Tabbing Order

Step 4: Generate HTML Internet Form and Test

Step 5: Setup Database Connections

Step 6: Generate CGI Scripts for I-Form

Step 7: Generate Final HTML I-Form

Step 8: Copy Files to Internet Server

Step 9: Test Database Connectivity

List of Files Required for Each Internet Form

USAGE	FILE NAMES
OneForm Designer Plus Form	<i>iformname.elf</i>
Fillable and Printable I-Form	<i>iformname.html</i> and/or <i>.pdf</i>
XML Description of I-Form Fields	<i>iformname.xml</i>
I-Form Database Scripts & Files Create a New Table Drop an Existing Table List of All Records in Database Show Database Record Details List Database Records for Deletion Delete Record from Database Table	 <i>create_iformnameTable-pl.cgi</i> <i>drop_iformnameTable-pl.cgi</i> <i>list_iformname-pl.cgi</i> <i>details_iformname-pl.cgi</i> <i>dlist_iformname-pl.cgi</i> <i>delete_iformname-pl.cgi</i>
Transaction Scripts & Files Save Submitted Text to Database Display Database Search Form Search Database and List Results Open Selected I-Form Open New Blank I-Form	 <i>save_iformname-pl.cgi</i> <i>search_iformname-pl.cgi</i> and <i>search_iformname.html</i> <i>results_iformname-pl.cgi</i> <i>open_iformname-pl.cgi</i> <i>blank_iformname-pl.cgi</i>
Help with Finding New I-Forms Show List of Forms and Options Select New Form or Find Form	 <i>admin_iformname.html</i> <i>index_iformname.html</i>

When generating a new I-Form, all of the files shown above will be created from the base ELF file. As you can see, each file created will include the basename of the ELF file in its name. So, the ELF file name is important.

It is best to start by creating a project directory specifically for each I-Form. If possible, name the project folder the same as the ELF. All of these files

will need to be copied over to your Internet server. It is easier just to copy the entire folder to the server's document root.

Also, remember that any logo images added to the Internet form must be stored within the project folder.

Testing I-Forms on Local Machine

Local functions like calculations and tab ordering can be tested without moving the I-Form to the server. To make sure GIF graphics are found, etc., the local paths for your I-Forms should mirror those on the server. Once the I-Form has been completed, the files can then be moved to their matching directories on the server.

Transferring Files with FTP Communication

OneForm Designer Plus users will need to be able to copy working I-Forms and CGI scripts from the design PC to the web server. Typically this is done with an FTP communication program. You may need to assist the forms designer with setting up FTP communications from his/her design PC so that this communication can be easily done. It is also important that the forms designer be able to create new folders under their document root and have sufficient privilege to do this.

When using FTP to transfer files to the server, **ALWAYS** select the file type of **ASCII** for all HTML and CGI files. The scripts will not execute if you transfer them as binary. For the image files GIF and JPG, use **BINARY**.

Also, all CGI scripts must have executable permissions on the server. You may need to assist the user with this function.

Internet Server Setup for Webmasters

Internet forms and CGI scripts created with Amgraf's OneForm Designer Plus are compatible with popular Internet web site servers like Microsoft's Windows IIS and Windows/UNIX Apache. Database connectivity to store I-Form fill data and to retrieve filled-in forms can be provided with databases such as SQL Server, MySQL, and Oracle.

This section is intended to give Webmasters and database administrators an idea of the configuration requirements to support I-Forms developers. Your server/database may be slightly different than the examples cited, and you are invited to contact Amgraf (on behalf of a OneForm Designer Plus customer) for technical assistance in setting up your server.

Following you will find complete details on:

- Server Configuration
- Perl Database Interface
- Document Root
- Database Scripts and I-Forms Access
- Login.cgi for MySQL and Oracle
- IIS Server Setup
- Perl Installation Instructions
- Using SQL Server 2000 with OneForm
- ODBC System DSN
- OneForm Utility Scripts
- Login.cgi for SQL Servers
- Security
- IIS Relative Path
- AFM Base path

Server Configuration

The Common Gateway Interface (CGI) is an essential tool for creating and managing comprehensive web sites. Perl is the most commonly used language for CGI programming.

CGI allows the web server to communicate with other programs on the same machine. For example, with CGI, the web server can invoke an external program, while passing user-specific data to the program (such as what host the user is connecting from, or input the user has supplied through an HTML form). The program processes that data, and the server passes the program's response back to the web browser.

With OneForm Designer Plus you can quickly create Perl5 CGI scripts for data capture and management.

To configure IIS so that CGI Scripts get executed, go to *Start --> Control Panel --> Administrative Tools --> Internet Information Services*. Complete details on IIS Server Configuration starts on page 266.

For Apache servers on both Microsoft and UNIX, edit your Apache Configuration file and make sure that the 2 lines emphasized are *uncommented* as shown in Figure A-1.

```
##
## httpd.conf -- Apache HTTP server configuration file
##
.....Lines Missing .....

#
# This may also be "None", "All", or any combination of "Indexes",
# "Includes", "FollowSymLinks", "ExecCGI", or "MultiViews".
#
# Note that "MultiViews" must be named *explicitly* --- "Options All"
# doesn't give it to you.
#
  Options ExecCGI FollowSymLinks MultiViews
.....Lines Missing .....

#
# AddHandler allows you to map certain file extensions to
"handlers",
# actions unrelated to filetype. These can be either built into the
server
# or added with the Action command (see below)
#
# If you want to use server side includes, or CGI outside
# ScriptAliased directories, uncomment the following lines.
#
# To use CGI scripts:
#
  AddHandler cgi-script .cgi
```

Figure A-1: Editing the Apache Configuration File

Perl Database Interface

The Internet forms server scripts use Perl DBI as the interface to the database manager on the server. For this to work on your server, the Perl modules for DBI and the database driver modules (DBD) for your particular database software need to be installed.

On Windows systems this is typically done by the use of “ppm” (Perl Package Manager) if running ActiveState Perl. Figure A-2 shows an example of ppm running and several database specific drivers loaded.

```
C:\>ppm
PPM interactive shell (2.1.2) - type 'help' for available commands.
PPM> help
Commands:
  exit                - leave the program.
  help [command]     - prints this screen, or help on 'command'.
  install PACKAGES   - installs specified PACKAGES.
  quit               - leave the program.
  query [options]    - query information about installed packages.
  remove PACKAGES    - removes the specified PACKAGES from the system.
  search [options]   - search information about available packages.
  set [options]      - set/display current options.
  verify [options]   - verifies current install is up to date.
  version           - displays PPM version number

PPM> query DB*
DBD-Mysql [1.2200] DBI driver for Mysql datasources
DBD-Oracle [1.06]  Oracle database driver for the DBI module
DBD-Oracle8 [1.06] Oracle 8 database driver for the DBI module
DBI [1.14]       Database independent interface for Perl
Digest-MD5 [2.11] Perl interface to the MD5 algorithm
XML-DOM [1.25]  A perl module for building DOM Level 1 compliant document
structures
PPM> _
```

Figure A-2: “ppm” Perl Package Manager

On UNIX systems, the Perl DBI packages can be downloaded either from the operating system website “www.freebsd.org” or from “www.cpan.org” (Comprehensive Perl Archive).

Complete details on installing Perl are found on page 267.

Document Root

Although Webmasters can organize their servers as they please, a typical document root for Internet forms on a Windows server is:

C:\inetpub\...

a typical document root for Internet forms on a UNIX server is:

/usr/local/www/data/...

The *login.cgi* file (and other variations for security purposes) would exist at the root level.

Under the root level, a separate project file folder will need to be created for each individual I-Form.

Database Scripts and I-Forms Access

OneForm Designer Plus automatically generates CGI scripts (see page 260) to create and drop data tables for each I-Form, and to save, search, list, and retrieve I-Forms). Each of these scripts includes code to open a file named *login.cgi* to get the database table name, the DB user login ID and password, which are then used to call the database manager. *Login.cgi* is a simple 3-line text file. You should determine the contents and permissions for *login.cgi* to maintain the security of your server. Examples of typical *login.cgi* files for MySQL, and Oracle databases are shown in Figure 14-23.

Database	login.cgi
MySQL	DBI:mysql:DATABASENAME LOGINID PASSWORD
Oracle	DBI:Oracle:DATABASENAME LOGINID PASSWORD

Figure 14-23: Typical Login CGI Files

Each Internet form requires a data table to store form-fill information. Each time an I-Form is submitted or saved, a new record is created to store the contents of the form. At a minimum, the I-Form scripts need to be allowed a “select and update” permission (after the table is established) to write and read records. When the I-Form is first established, permission must be available through the *login.cgi* technique to “create and drop” a table.

For security purposes, you may wish to manage the create/drop functions by editing the CGI scripts used to create a new table and drop or delete a table. Have them open a different *login.cgi* file. You may also wish to remove the drop CGI script once testing is completed.

IIS Server Setup with SQL Server 2000 on Windows XP Professional

Windows XP Professional (Service Pack 1)

Get the latest updates available for your computer's operating system (software and hardware), from the Microsoft Windows Update website:

<http://windowsupdate.microsoft.com>

Internet Information Services (IIS)

Windows XP Professional includes Internet Information Services (IIS) Version 5.1, which makes it possible for you to host your own web site on the Internet or your intranet. IIS is not available in Windows XP Home Edition.

IIS for Windows XP Professional is designed for users developing a Web service, for home, or for office use. IIS for Windows XP Professional can only service 10 simultaneous client connections and does not leverage all the features of the server versions.

Before you can use IIS, you must install it separately (after you have installed Windows XP Professional), on your computer. Install IIS through the Add/Remove Programs option in Control Panel.

After you have IIS installed, you can view the product documentation by typing *<http://localhost/iisHelp>* in your browser address bar.

Perl

OneForm Designer Plus requires that the Perl (Practical Extraction and Report Language) software package be installed in order to test web server CGI Scripts for Internet forms processing. This software is available for free from the ActiveState Corporation. You will need to download and install the ActivePerl software.

Note: ActivePerl contains the Perl language, the Perl Package Manager (for installing CPAN packages), and complete online help. During installation you may notice that there are two release builds, a 600 series and a 800 series. OneForm Designer Plus depends on the 600 series.

In addition to the ActivePerl script processor program, you will also need to download and install several Perl database access program modules required as follows:

DBI	Database independent interface for Perl
DBIx-XML_RDB	Extension for creating XML from existing DBI
DBD-Mysql	DBI driver for Mysql datasources
DBD-ODBC	ODBC Driver for DBI
Win32-ADO	ADO Constants and helper functions

Step-by-Step Perl Installation Instructions

1. On your Windows PC, create a folder on the C:-drive named \usr (C:\user).
2. Connect to the Internet and start your browser.
3. Download a copy of ActiveState's ActivePerl build 600 series by going to this link:

*[http://downloads.activestate.com/ActivePerl/Windows/5.6/
ActivePerl-5.6.1.635-MSWin32-x86.msi](http://downloads.activestate.com/ActivePerl/Windows/5.6/ActivePerl-5.6.1.635-MSWin32-x86.msi)*

Save the downloaded file on your hard disk in the new C:\usr folder.

4. Download (and save in the C:\usr folder) the required PMPackages from ActiveState by going to these links:

*<http://ppm.activestate.com/PPMPackages/zips/6xx-builds-only/DBI.zip>
http://ppm.activestate.com/PPMPackages/zips/6xx-builds-only/DBIx-XML_RDB.zip
<http://ppm.activestate.com/PPMPackages/zips/6xx-builds-only/DBD-Mysql.zip>
<http://ppm.activestate.com/PPMPackages/zips/6xx-builds-only/DBD-ODBC.zip>
<http://ppm.activestate.com/PPMPackages/zips/6xx-builds-only/Win32-ADO.zip>*

5. Using Windows Explorer, go to the C:\usr folder and locate the *ActivePerl-5.6.1.635-MSWin32-x86.msi* file. Double-clicking on this file will install ActiveState's ActivePerl. When prompted, be sure to change the default installation location: "C:\perl\" to "C:\usr\".
6. Double-click on each of the "zip" files to uncompress the PMPackages. Extract the contents of each PMPackage into your C:\usr folder.
7. Go to the MS-DOS Prompt.
8. Change directory to your C:\usr folder:
cd \usr [Enter].
9. Key in the following command and press [Enter]:
ppm install -location=. DBI
10. Key in the following command and press [Enter]:
ppm install -location=. DBIx-XML_RDB
11. Key in the following command and press [Enter]:
ppm install -location=. DBD-Mysql
12. Key in the following command and press [Enter]:
ppm install -location=. DBD-ODBC
13. Key in the following command and press [Enter]:
ppm install -location=. Win32-ADO
14. Key in *exit* and press [Enter] to close the MS-DOS window.

Your Perl installation is now complete.

IIS Configuration for CGI

The Common Gateway Interface (CGI) is an essential tool for creating and managing comprehensive web sites. Perl is the most commonly used language for CGI programming.

CGI allows the web server to communicate with other programs on the same machine. For example, with CGI, the web server can invoke an external program, while passing user-specific data to the program (such as what host the user is connecting from, or input the user has supplied through an HTML form). The program processes that data, and the server passes the program's response back to the web browser.

With OneForm Designer Plus you can quickly create Perl5 CGI scripts for data capture and management.

To configure IIS so that CGI Scripts get executed, go to *Start --> Control Panel --> Administrative Tools --> Internet Information Services*.

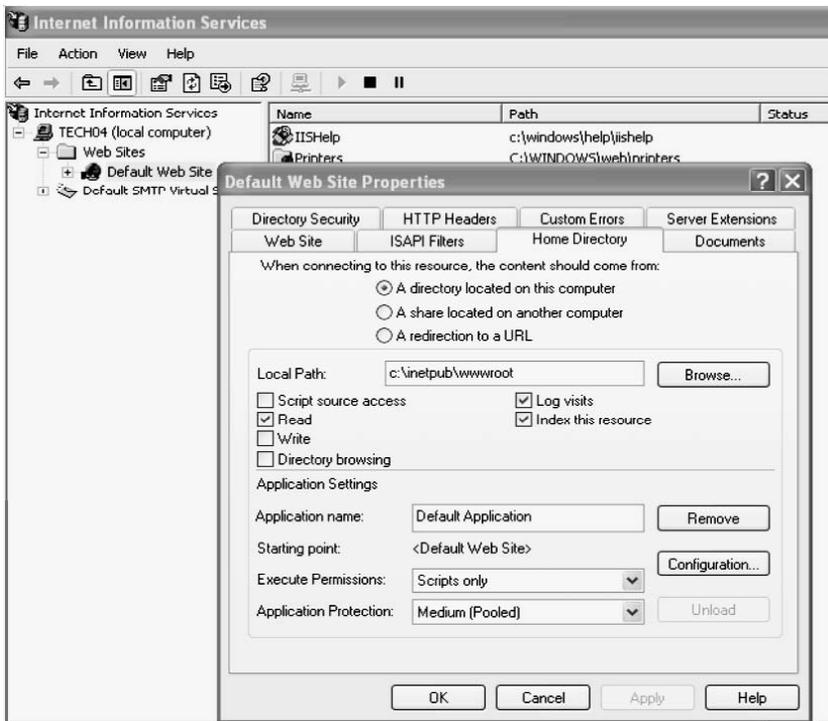


Figure 14-20: Internet Services Manager Default Web Site Properties

Highlight the *Default Web Site* server and select *Properties*. In the [*Home Directory*] tab click on [*Configuration*], the Application Configuration screen will come up. Highlight the *.cgi* extension and [*Add*] a new Extension Mapping for *.cgi* extensions.

`.cgi C:\usr\bin\perl.exe "%s" %s GET,HEAD,POST`

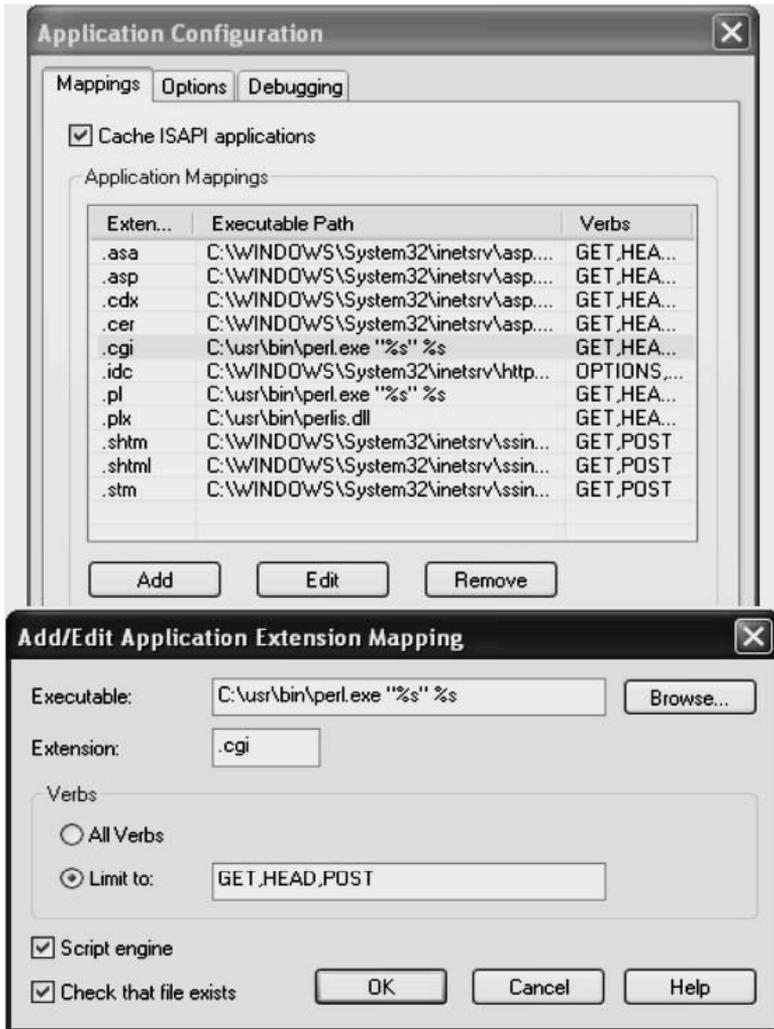


Figure A-3: Application Extension Mapping

The Verbs should be "GET,HEAD,POST" and the [Script Engine] checkbox should be checked.

SQL Server 2000

SQL Server 2000 is a Relational Database Management System (RDBMS) that runs only on Microsoft Windows platforms. SQL Server 2000 editions include the Enterprise Edition, the Standard Edition, the Personal Edition, the Developer Edition, and the Evaluation Edition.

To use SQL Server 2000 with OneForm for database input/output you have to create a Database and a Security Login for the Internet Guest Account (IUSR). Then Grant Database Access to that database in the role of public and db_owner for the IUSR account.

To create the Database, Security Login and Grant Access go to *Start --> Control Panel --> Administrative Tools --> SQL Server Enterprise Manager*.

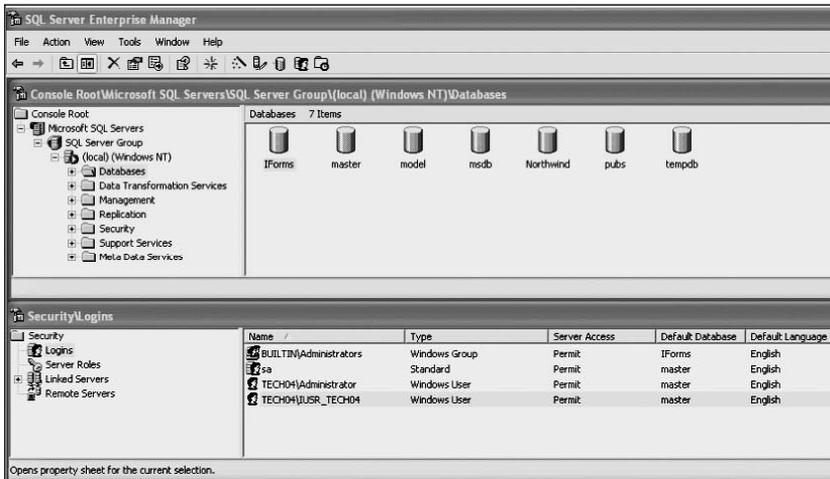


Figure A-4: SQL Server Enterprise Manager

Select *[Databases]*, right click and pick *[New Database]*. Enter the name of your database *IForms* and then *[OK]*.

Expand the [Security] tab and select [Logins]. Right click and pick [New Login] then browse, select, and [Add] the IUSR account. Now go to the [Database Access] tab. Checkmark the IForms database and both *public* and *db_owner*, then [OK].

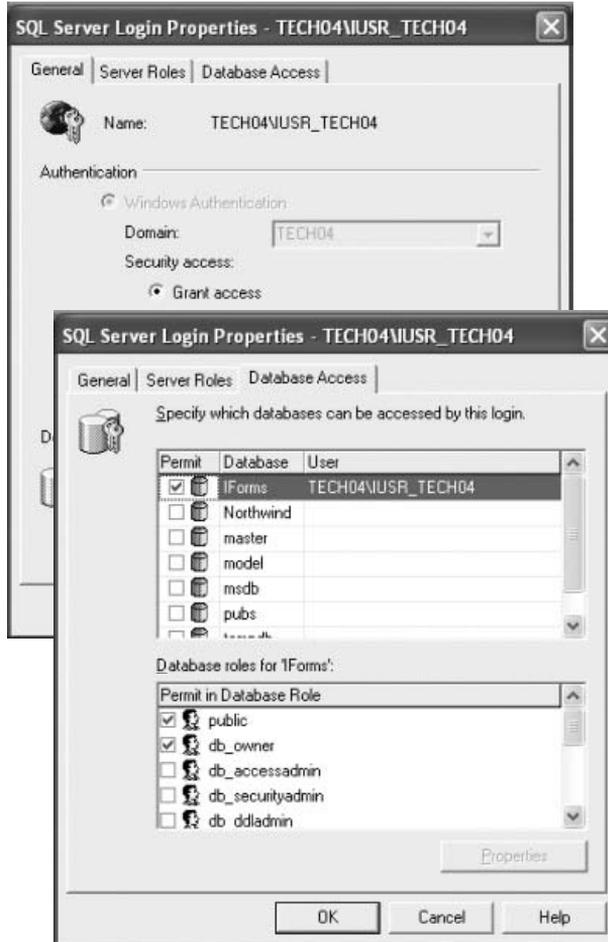


Figure A-5: Edit the Login Properties, Database Access

ODBC System DSN

A Data Source Name (DSN) stores information about how to connect to a data source provider. A System DSN is visible to all users of the computer, including NT services. ODBC (Open DataBase Connectivity) is the Microsoft standard for accessing different types of database systems from Windows.

To create an ODBC System DSN go to *Start --> Control Panel --> Administrative Tools --> Data Sources (ODBC)*.

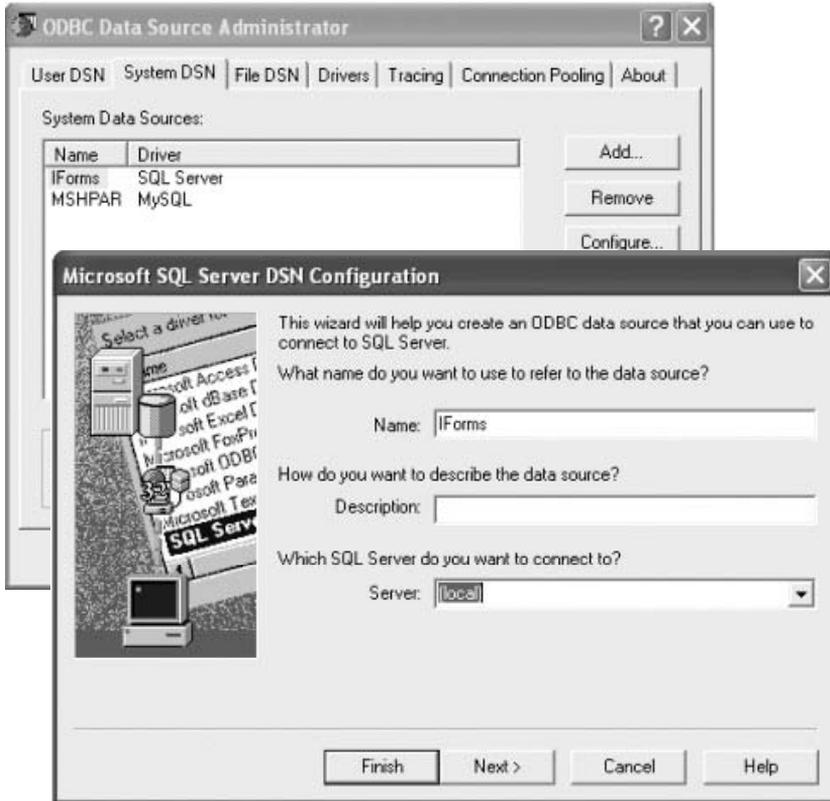
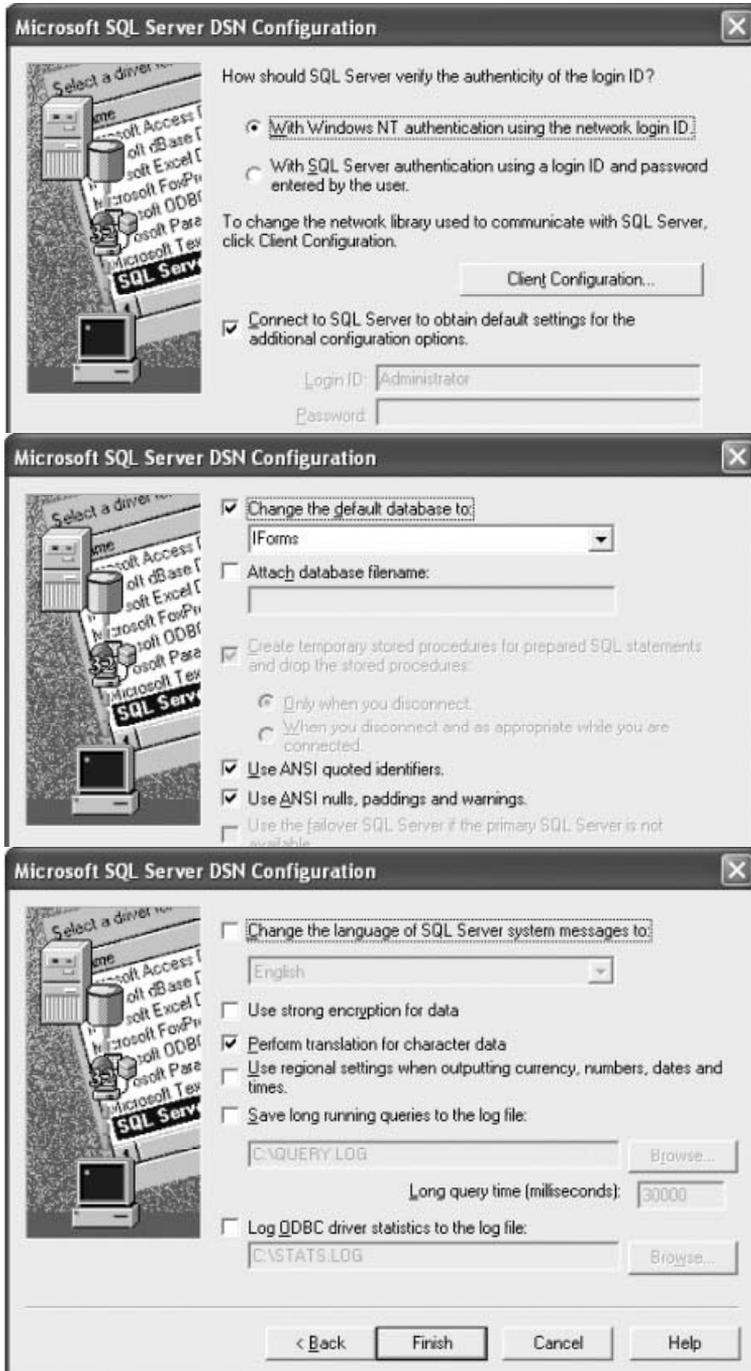


Figure A-6: SQL Server DSN Configuration

Select the *[System DSN]* tab and *[Add]*, then choose the *SQL Server* driver as your data source and *[Finish]*. Now enter the name *IForms* and set the default database to be *IForms*.

Following are the dialogs for the *IForms Database SQL Server DSN* configuration. Click *[Next]* for each, then *[Finish]*.



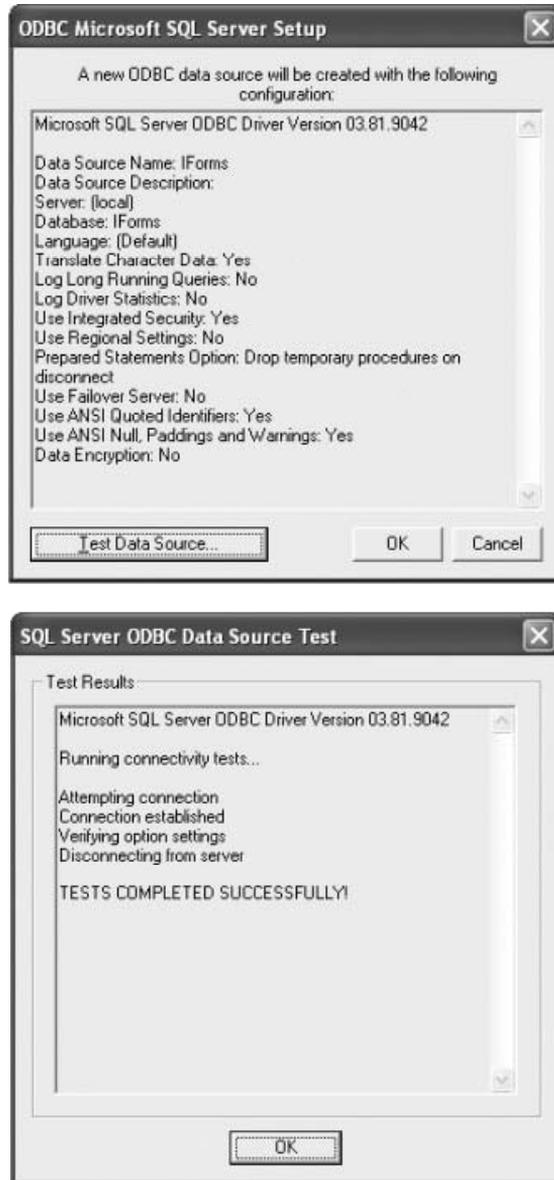


Figure A-7: Select the [Test Data Source] Button

Test your DSN to see if it can connect and disconnect successfully.

OneForm Utility Scripts

OneForm comes with several server side scripts that **must be copied** to the web server. These are required by internet forms that need the ability to access databases. The scripts are static, placed in relative directories in relation to the location of the internet form, and serve as utility scripts that the internet forms scripts reference.

You will need to copy the folder *UtilityPackages* from *C:\Program Files\Amgraf\OneForm\PerlModules* to your web server, at the location "one folder back" (..), from your internet forms project folder.

For example, if your web server "Root Directory" is *C:\inetpub\wwwroot* and your internet form is located in *C:\inetpub\wwwroot\IForms\req04* then you would copy the *UtilityPackages* folder to *C:\inetpub\wwwroot\IForms*, which is "one folder back" from your internet form req04 folder.

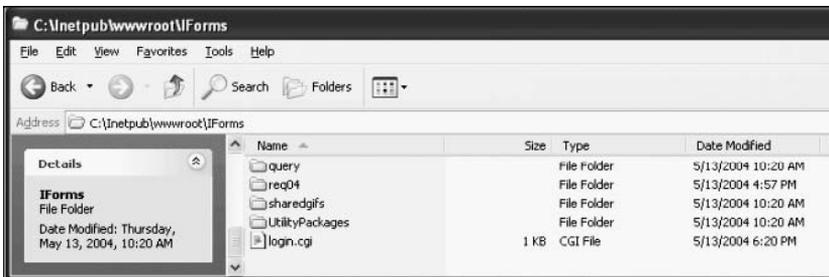


Figure A-8: List of the Root Directory

Do the same with *C:\Program Files\Amgraf\OneForm\PerlModules\query* and *C:\Program Files\Amgraf\OneForm\sharedgifs* folders.

Login.cgi

Every internet form created contains a reference to read the contents of a file called *login.cgi*. This is a simple three-line text file that contains the information for connecting to your database.

You will have to create this file, it is not created for you, using a text editor such as Notepad. However be absolutely sure that the extension is *.cgi* and not anything else.

The first line of the file is required and contains the appropriate CGI Perl syntax for connecting to your DSN. In the case of our IForms SQL Server ODBC DSN it is:

```
DBI:ODBC(SQLServer):IForms
```

The second and third lines would be the LOGINID and PASSWORD possibly required in order to access the database. In our case the Internet Guest Account (IUSR) is used and requires no password.

Security

In these examples we have complete anonymous read/write access to our SQL Server database IForms. You can however apply various security measures from NTFS file system, IIS server and folders, SQL database properties and ODBC DSN configurations.

IIS Relative Path

When using IIS, the relative path statement (..) does not work when called from a CGI Perl script to reference an additional library path.

You will need to edit the following utility scripts and search for:

```
use lib "../UtilityPackages";
```

and change it to be the full path, such as:

```
use lib "/inetpub/wwwroot/IForms/UtilityPackages";
```

Files to Change: query\IFormRefDBdata-pl.cgi
query\IFormRefDBlist-pl.cgi

AFM Base Path

When opening a PDF Internet form, you may get an error screen in reference to "Premature end of script headers: Negative length".

To fix this problem, edit the following file and search for:

```
$AFMBasePath =
```

and change it to be the full path, such as:

```
$AFMBasePath =  
"/Inetpub/wwwroot/IForms/UtilityPackages/00ES/";
```

File to Change: UtilityPackages\00ES\afm_input.pm

Assistance

If you need assistance with any setup or configuration, please contact Amgraf Support at:

support@amgraf.com [Email]
(816) 474-4797 [Voice]
(816) 842-4477 [Fax]
<http://www.amgraf.com>
<http://groups.msn.com/AmgrafUserGroup>