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Welcome to the IDS Developer Edition Virtual Appliance

IDS 11.50.xC2DE / SLES10 SP2 Virtual Appliance v1.1

The IBM® Informix® Dynamic Server (IDS) 11.50 Developer Edition/SUSE® Linux Enterprise Server (SLES) 10 SP2 virtual appliance contains all the components that you need to start testing and developing software with IDS 11.50.

Post any questions or comments related to the virtual appliance in IBM IDS DeveloperWorks Forum.

System Requirements

The IDS 11.50/SLES10 SP2 virtual appliance requires either VMware® Workstation 6.x or later or VMware Player 2.0.3, 2.0.5 or later to be installed on your host machine. You can obtain VMware Player here

The recommended amount of VMware Player memory allocation is 1 GB.
The appliance provides a pre-configured, compressed virtual disk of 12 GB (maximum size), mounted as /. The appliance also comes with a compressed 40 GB virtual disk mounted as /data. These disks will grow as needed during use of the appliance.

System User IDs and Passwords

Three user accounts are pre-defined:

- user **informix** (password: **informix**): the dedicated Informix database administrator (DBA) account
- user **developer** (password: **developer**): regular, non-privileged user account
- user **root** (password: **root**): privileged SUSE Linux admin account

The command **su** or **su –** lets you temporarily obtain root (super user) permissions. To switch between the three user accounts, use the **su - *username*** command. For example, to start or stop one of the IDS demonstration instances as user **informix**, invoke a subshell as user informix by typing **su - informix**. Then run the appropriate scripts to create, start, stop, or remove IDS demonstration instances. When finished, exit the subshell by typing **exit**.

Installed Software

The following products are pre-installed, pre-configured, and ready to run:

Product	Description
IBM Informix Dynamic Server 11.50. xC2DE	Full-function, object-relational data server. Includes important capabilities such as: high reliability, security, usability, manageability and performance.
IBM Informix Client SDK 3.50.xC2	A single packaging of several application programming interfaces (APIs) for rapid, cost-effective development of applications for IBM Informix servers.
IBM Informix JDBC Driver 3.50.xC2	A Java database connectivity (JDBC) driver -- the JavaSoft specification of a standard API that allows Java programs to access database management systems.

IBM Informix Spatial DataBlade 8.21. UC2	IBM Informix® Spatial DataBlade™ module brings all the significant features and benefits of the IBM Informix Dynamic Server (IDS) to location-based data. Many key business decisions involve location and proximity. The Spatial Datablade enables organizations to transform both traditional and location-based data into important information to help gain a competitive advantage.
IBM Informix Web DataBlade 4.13.UC3	The Informix® Web DataBlade™ module is a collection of tools, functions, and examples that ease development of "intelligent", interactive, Web-enabled database applications.
IBM Data Server Driver for JDBC/SQLJ	The IBM Data Server Driver for JDBC and SQLJ, provides support for client applications written in Java™ using JDBC.
IBM Data Server Driver for ODBC/CLI	The IBM Data Server Driver for ODBC and CLI supports open source drivers for IBM Data Servers.
IBM OpenAdmin Tool for IDS 2.22	The OpenAdmin Tool for IDS, provides the ability to administer multiple database server instances from single location. Some tasks you can perform with OpenAdmin include: gathering and analyzing performance statistics, monitoring system health, defining and managing automated tasks through the SQL Administration API, creating and displaying performance histograms for analysis and tuning, and monitoring high availability solutions that include HDR, shared disk secondary servers, and remote standalone secondary servers. You can easily plug in your own extensions to OpenAdmin to create the functionality you need.

IBM Data Studio 1.1.2	Data Studio provides a rich set of integrated functions that allows you to perform database design, development, deployment, and management tasks. Using the workbench, you can develop and test routines, deploy data-centric web services, create and run SQL and XQuery queries, and develop Java applications that access databases or in-memory data. In addition, you can perform database administration tasks such as creating and altering database objects and managing privileges. Using the administration console, you can monitor the health and availability of databases, view dashboards, view alerts, and troubleshoot problems using expert recommendations. You can also monitor Q replication and event publishing, generate replication health reports, and perform basic replication operations. Eclipse C/C++, PHP, and Ruby on Rails plug-ins are not included.

See First Steps for information about the tools and demonstration programs included with the IDS virtual appliance.

Installing and Running the IDS Virtual Appliance

You must first install VMware Player or VMware Workstation on your host computer. Follow the manufacturer's instructions for downloading and installing the software.

Installing on Windows systems

Follow the steps below to install the appliance on Windows systems:

1. Save the self-extracting appliance archive .exe and two .rar files into a folder.
2. Run the .exe file to extract the archive.
3. Start VMware Player or VMware Workstation.
4. Select **Open an Existing Virtual machine**.
5. Navigate to the folder in which the archive was extracted, select the virtual appliance, and click **Open**.
6. Press **Ctrl + G** to control the virtual machine. To return to controlling your own computer, press **Ctrl + Alt**.
7. Log in the very first time as user **root** with the password **root**.
8. Configure the language settings, time zone, and keyboard layout of the console window and accept the IBM software license agreements. Use the **Tab** key to navigate among the setting fields, and the **Enter** key to complete the setting.
9. After the initial boot-up and configuration sequence, the operating system completes initialization and presents the user with a login prompt. Enter **developer** in the Username field. Enter **developer** when prompted for the password.

Installing on UNIX or Linux systems

1. Save the archive file in a directory on your computer.
2. Enter the following command from a shell prompt to uncompress the file:

   ```
   tar xvjf Base-IDS-Developer-Edition-v1.1.x.tar.bz2
   ```
3. Start the VMware Player or VMware Workstation.
4. Select **Open an Existing Virtual machine**.
5. Navigate to the folder in which the archive was extracted, select the virtual appliance, and click **Open**.
6. Press **Ctrl + G** to control the virtual machine. To return to controlling your own computer, press **Ctrl + Alt**.
7. Log in the very first time as user **root** with the password **root**.
8. Configure the language settings, time zone, and keyboard layout of the console window and accept the IBM software license agreements. Use the **Tab** key to navigate among the setting

fields, and the **Enter** key to complete the setting.
9. After the initial boot-up and configuration sequence, the operating system completes initialization and presents the user with a login prompt. Enter **developer** in the Username field. Enter **developer** when prompted for the password.

Installing Mac OS X systems

You must first install VMware Fusion on your host computer. Follow the manufacturer's instructions for downloading and installing the software.

1. Save the archive file in a directory on your computer.
2. Enter the following command from a shell prompt to uncompress the file:

   ```
   tar xvjf Base-IDS-Developer-Edition-v1.1.x.tar.bz2
   ```
3. Start VMware Fusion.
4. Select **Open an Existing Virtual machine**.
5. Navigate to the folder in which the archive was extracted, select the virtual appliance, and click **Open**.
6. Click inside the VMware Fusion window to control the virtual machine.
7. Log in the very first time as user **root** with the password **root**.
8. Configure the language settings, time zone, and keyboard layout of the console window and accept the IBM software license agreements. Use the **Tab** key to navigate among the setting fields, and the **Enter** key to complete the setting.
9. After the initial boot-up and configuration sequence, the operating system completes initialization and presents the user with a login prompt. Enter **developer** in the Username field. Enter **developer** when prompted for the password.

First steps

In order to get you started quickly with IDS 11.50 software development, a special folder (/opt/IBM/informix/FirstSteps) was created that contains topic-specific subfolders. The subfolders contain topic-specific labs and demos. Notice the symbolic link to the FirstSteps folder on your GNOME desktop.

Developers who would like to get used to IDS 11.50 and its SQL language should take a look at the IDS Detective Game, located in the following folder:

 /opt/IBM/informix/FirstSteps/01_IDS_Detective_Game.

In each subfolder you'll find a README file with a brief introduction to the objective of that demo or lab. As part of your development activities with IDS 11.50, you probably will need to execute SQL language scripts either interactively or as command scripts. The standard tool which comes with each IDS installation is called dbaccess. You can either use that tool by executing the command dbaccess in a terminal window, or by double-clicking on the dbaccess icon on your GNOME desktop. Other options to work interactively with SQL are provided in IBM Data Studio and the OpenAdmin Tool for IDS.

The IDS 11.50 single-instance demo (pre-configured)

The **demo_on** IDS instance comes preconfigured with two databases called **stores** and **idsgame**. The **idsgame** database is used by the IDS Detective Game. The virtual appliance is configured to automatically start the **demo_on** instance each time the virtual appliance is powered on and to automatically stop the **demo_on** instance each time the virtual appliance is powered off. Use the following commands if you want to re-create the **demo_on** instance from scratch or if you want to manually set environment variables that affect the behavior of the **demo_on** instance. The scripts must be run as user **informix**.

createDemo	Re-creates the demo instance from scratch.
removeDemo	Deletes all database files associated with the demo instance.
startDemo	Starts the demo instance.
stopDemo	Stops the demo instance.

The **setDemo** script can be used to set the environment variables for the **demo_on** instance. The convenience scripts that create, start, stop, and remove the **demo_on** instance use the **setDemo** script, so you don't need to explicitly source this script before running the convenience scripts. However, if you want to execute dbaccess from a command prompt or if you want to perform other actions in the context

of the **demo_on** environment, you can explicitly source the **setDemo** script to set up the **demo_on** environment.

. setDemo	Sets the correct environment variables for the demonstration instance and connects to the location where the server log and dbspaces reside.

HINT: In addition to the basic configuration, the **demo_on** instance also provides these helpful enhancements for your development activities:

- A default temporary dbspace, called **tempdbs** (10 MB)
- A default and system smart blob space, called **sbspace** (50 MB)
- One external space to support the Basic Text Search (BTS) extension, called **bts_extspace** (physically located in $INFORMIXDIR/demo/server/bts_extspace)
- One **bts** virtual processor (VP) to use the BTS extension
- One **idsxmlvp** virtual processor (VP) to enable additional built-in XML capabilities in IDS 11.50
- One **jvp** virtual processor to enable Java user-defined routines in IDS

Configuration Notes

Keyboard Layout and Settings

GNOME desktop (X11)

To adjust the keyboard layout in the GNOME desktop:

1. Click the **Computer** menu (on the lower left corner of the desktop), and then select **YaST**.
2. You will be prompted for the user root password. In the **YaST** Control Center **System** Group section, choose the **Keyboard Layout** applet.
3. While in the **Keyboard Properties** window, select your keyboard layout and type from the provided pull-down menus.

Network Configuration

The IDS virtual appliance has been configured with two network connections. The first network connection (eth0) uses host-only networking, which means that the appliance can be accessed from your host operating system using a pre-defined, fixed IP address. The hostname for this IDS virtual appliance is **ids1150srvr** and is configured with a static IP address: 192.168.179.100.

A second network connection (eth1) is configured, and it uses the NAT protocol to access the Internet from the SUSE server. This connection is useful if you need to download components to update your image.

Troubleshooting: If the IDS virtual appliance is not accessible via the static IP address 192.168.179.100, it could mean that your VMware Workstation or VMware Player has been set up to use a different subnet for host-only networking.

To adjust the VMware Workstation subnet settings:

1. Select **Edit > Virtual Network Settings > Host Virtual Network Mapping**.
2. Find VMware Network Adapter VMnet1, and click the > button on the right side.
3. Select **Subnet**, and adjust the subnet setting to **192.168.179.0** (mask: **255.255.255.0**).
4. Confirm the changes.
5. Restart your VMware image.

If for some reason you can't modify the VMnet1 settings, you could instead add a new VMware Host Virtual Adapter. To add a new adapter in VMware Workstation:

- Select **Edit > Virtual Network Settings > Host Virtual Adapters > Add….**
- Click the **Host Virtual Network Mapping** tab.
- Configure the new adapter as described above for the VMnet1 adapter.

If you are using VMware Player, you need to locate and execute the vmnetcfg.exe file in the VMware Player installation directory to apply the changes mentioned above in the VMware Workstation section.

Setting the subnet mask on Mac OS X systems

Perform the steps below to configure your Mac OS X to support network communication between your host system and the IDS virtual appliance:

1. From a terminal window on your host system, change directories to the following location:

   ```
   cd /Library/Application Support/VMware Fusion
   ```
2. Stop the network with the following command:

   ```
   sudo ./boot.sh --stop
   ```
3. Modifiy the following three files to replace the existing subnet value with 192.168.179:

   ```
   config
   locations
   vmnet/dhcpd.conf
   ```

4. Restart the network:

   ```
   sudo ./boot.sh --start
   ```

After reconfiguring the subnet, you should be able to ping 192.168.179.100 from the host.

Exchanging Data Between the Host and the Virtual Appliance

This IDS virtual appliance is configured to allow for data exchange between the virtual appliance and the host operating system using a variety of methods.

Telnet and FTP support

You can use **telnet** or **ftp** to access a remote host, but you cannot telnet or ftp into the applicance unless you first install and configure the telnet or ftp services.
The appliance supports two Ethernet cards. You can either use the fixed IP address **192.168.179.100** or the dynamic IP address that has been assigned by the DHCP client.
Tip: To determine the dynamic IP address, run the command **ipconfig eth1** from a terminal window and find the **inet addr** value.

Shared folder access

VMware supports the concept of a shared folder that can be accessed both from the IDS virtual appliance and from the host operating system. The shared folder is initially disabled. To enable sharing, select **VMware Player > Shared Folders**, then click the **Always enabled** or **Enabled until next power off or suspend** radio button. This IDS virtual appliance is configured with a shared folder called **C:\Temp**.
If the host operating systemm folder does not exist on your host machine, you must create it. From within the appliance, shared directories are accessed using **/mnt/hgfs**. For example, if you create **C:\Temp** and share the folder as **Temp**, then you can access files from the appliance using **/mnt/hgfs/Temp**.

Important: In order to use the shared folder functionality, you might have to enable the feature. For VMware Workstation: Select **VM > Settings > Options > Shared Folders** and change the default option from **Disabled** to **Always enabled**.
For VMware Player, select **VMware Player > Shared Folders**, and change the default option from **Disabled** to **Always enabled**. The shared folder option has been successfully tested with VMware Workstation 6.x and VMware Player 2.0.3.

Cut and paste between host OS and the IDS virtual appliance (GUI mode only)

The IDS virtual appliance comes with the most current VMware Tools pre-installed. VMware Tools optionally supports the cut-and-paste exchange of data between host OS applications and appliance applications in most environments. However, the cut-and-paste functionality does not always work with the virtual appliance for reasons not known yet. From GUI (GNOME) mode, run the command **vmware-toolbox** in a terminal window. While that command is running (it can be minimized if required), you can cut and paste data between the host and the IDS virtual appliance in both directions.

Changing the VMware Memory Configuration

You can adjust the amount of memory used by the appliance.

To adjust memory settings when using VMware Player:

1. Click **VMware Player** at the top of the appliance screen, then select **Troubleshoot > Change Memory Allocation**.
2. Adjust the memory settings as required. The display shows the minimum, recommended, and maximum amounts of memory to allocate.
3. Clock **OK** when finished. The change will take effect only after the virtual appliance is restarted.

To adjust memory settings when using VMware Workstation:

VM settings are adjusted with the menu pick **VM > Settings...** This brings up the Virtual Machine Settings dialog box. Make the following adjustments.

1. Select the **Hardware** tab.
2. Highlight **Memory** (on the left).
3. Adjust the memory setting to 768 MB using the slider on the right.

Changing the Screen Resolution

The default screen resolution for the appliance is 1024 x 768. You can change this resolution to suit your host computer display settings.

To change screen resolution:

1. Click **Computer** in the bottom left corner of the IDS virtual appliance screen.
2. Click **Control Center** below the **System** heading.
3. In the Control Center, click **Screen Resolution**.
4. Change the screen resolution as desired from the Resolution drop-down list and then click **Apply**.
5. A screen displays asking whether you want to keep this resolution. Click either **Use Previous Resolution** or **Keep Resolution**.

MACH11 Cluster

You can easily create a demonstration cluster environment that is separate from the demonstration instance. To find out more about MACH11 and configuring MACH11 clusters, see [IDS 11.5 Info Center](#)

This IDS virtual appliance is pre-configured with several independent IDS instances. The **cluster demonstration** is a set of pre-configured instances that demonstrate MACH11 capabilities. All demonstration instances are independent of one another, so you do not have to stop or remove any of the other pre-configured instances prior to creating or starting the cluster demonstration instances. The **demo_on** instance is the only instance that is automatically created and pre-configured to start when the IDS virtual appliance is powered on. You must explicitly create and start the **cluster demonstration** instances. Convenience scripts are provided for you to create, start, stop, and remove the **cluster demonstration** instances. All convenience scripts must be executed as user informix.

IMPORTANT: To use the cluster demonstration, you must run the **createCluster** script at least once as user **informix**. After creating the cluster demonstration, you can start and stop the cluster instances as user Informix with the **startCluster** and **stopCluster** scripts.
The cluster environment does *not* start automatically after a re-boot, unlike the **demo_on** instance.

To create, remove, start, or stop the demonstration cluster as user informix, use one of the following commands:

createCluster	Creates and starts an IDS 11.50 demonstration cluster.
removeCluster	Stops the demonstration cluster and removes all database files associated with the cluster instances.
startCluster	Starts a previously created demonstration cluster.
stopCluster	Stops a running IDS demonstration cluster.

The MACH11 Cluster demonstration consists of multiple **cluster demo** instances. The convenience scripts mentioned above manage all instances. We also provide a convenience script for each of the **cluster demonstration** instances that sets the environment for the instance. These scripts are useful if you want to perform actions in the context of one of the cluster demonstration instances (to look at the instance's server log, for example, or to run dbaccess against the instance, and so on.) In this case, source the appropriate environment setup script from a command prompt.

. setPrimary	Sets the environment variables for the primary instance (cheetah2).
. setSDS1	Sets the environment for the sds1 instance.
. setSDS2	Sets the environment for the sds2 instance.
. setHDR	Sets the environment for the hdrsrv instance.
. setRSS1	Sets the environment for the rss1 instance.
. setRSS2	Sets the environment for the rss2 instance.

Simple, Web-based demonstrations for the IDS 11.50 demo cluster

This IDS virtual appliance includes some pre-configured demonstrations that illustrate some of the high-availability features provided by IDS 11.50. These demonstrations are written as PHP-based Web pages and they require the **cluster demo** instances to be started.

Firefox has been pre-configured to display the introduction page to these PHP demos in the second browser tab. The URL is http://localhost/clusterDemo/.

OpenAdmin Tool (OAT) version 2.22 for IDS

Starting OAT for the First Time

Click the link below to access the OpenAdmin Tool (OAT):

http://localhost/openadmin

In the **Quick Login** section, click **Get Servers**, choose **demo_on** in the **Select a Connection** box, then click the **Login** button.

The following server details are filled in automatically:

Server name	**cheetah2**
hostname	**ids1150srvr**
Port	**1526**
User	**informix**
Password	**informix**

Installing the Missing Plugins

The first time you use OAT, a note is displayed at the top of the page indicating that additional plugins are required to display all the media on the page. Follow these steps to install the plugin:

1. Ensure you have internet connectivity.
2. Click the **Install Missing Plugins** button.
3. Click **Next** when the *Plugin Finder Service* window is displayed.
4. Click the **I agree** button to accept the license agreement.
5. In the Firefox window, select **.rpm** from the dropdown list and then click **Agree and install now**.
6. When asked whether to Open or Save the file, select **Open with** and click **OK**. If you receive a message indicating that no plugins were installed, then click **Manual Install**.
7. You will be prompted to enter the root password in order to install the plugin. Enter **root** for the password and then click **Continue**.
8. Click the **Install** button when the *Software Installer* window is displayed.
9. Click the **Close** button when the Software Installer indicates a successful installation.
10. In the Firefox OpenAdmin tool session, click **Reload** one or two times to refresh the display.

All potential IDS demonstration instances have been added to the OAT Connection Manager. There are no connection group passwords defined.

The single demonstration instance **demo_on** belongs to the **Default** connection group.

OAT has been pre-configured as follows:

- There is no OAT Group password
- The **demo_on** instance has been added to the **Default** group
- An OAT Group called **IDS11Cluster** has been created. All cluster demonstration instances have been added to this OAT Group. The cluster demonstration instances are:
  - **cheetah2**
  - **sds1**
  - **sds2**
  - **hdrsrv**
  - **rss1**
  - **rss2**

The PHP files for OpenAdmin are located in various directories under:**/opt/IBM/openadmin** in case you want to modify them.

Tools and Demonstration Programs

This page describes the tools and convenience scripts included with the virtual appliance. These scripts are located in $INFORMIXDIR/bin.

Script Name	Description
createCluster	Use this script to create the IDS cluster. The script creates a primary server, an HDR secondary server, two SD (shared disk) secondary servers, and two RS (remote standalone) secondary servers. The script also configures and starts the Connection Manager.
createDemo	Re-creates the demo instance from scratch.
createEsqlcDemo	Creates the ESQL/C demonstration environment
removeCluster	Stops the demonstration cluster and removes all database files associated with the cluster instances.
removeDemo	Deletes all database files associated with the demonstration instance.
removeEsqlcDemo	Deletes all files associated with the ESQL/C demonstration.
setDemo	Sets the correct environment variables for the demonstration instance.
setEsqlcDemo	Sets the correct environment variables for the ESQL/C demonstration.
setHDR	Sets the environment for the hdrsrv instance.
setPrimary	Sets the environment variables for the primary instance (cheetah2).
setRSS1	Sets the environment for the rss1 instance.
setRSS2	Sets the environment for the rss2 instance.
setSDS1	Sets the environment for the sds1 instance.
setSDS2	Sets the environment for the sds2 instance.
startCluster	Starts a previously created demonstration cluster.
startDemo	Starts the demonstration instance.
startEsqlcDemo	Starts the ESQL/C demonstration
stopCluster	Stops a running IDS demo cluster.
stopDemo	Stops the demonstration instance.
stopEsqlcDemo	Stops the ESQL/C demonstration
tailCM	Runs the tail command to continuously display the last few lines of the Connection Manager log file.

How to use the Informix JDBC Driver and the JDBC Common Client

The objective of this tutorial is to show you how to connect to an IDS instance using the JDBC driver.

This example assumes that you are logged into the developer account. Modify the instructions appropriately if you are logged into the informix account.

The sample code assumes that the **demo_on** instance is up and running and that the stores database is available. To make sure the server is online, type the following in the terminal window:

```
onstat -
```

If the server is not on line, start it by entering the following command as user informix

```
startDemo
```

In the steps below, you will compile and run a java program named **gentest.java**

1. From a terminal window, change to the tutorial directory:

   ```
   cd ~/Desktop/IDS11_FirstSteps/02_Java
   ```

2. Source the environment setup file:
   - If you are running sh, bash, or ksh:
     ```
     . ./setJDBCenv
     ```
   - If you are running csh:
     ```
     source ./setJDBCenv
     ```

3. Compile the Java source:

   ```
   javac gentest.java
   ```
4. Now, run the program using the JDBC Common Client:

   ```
   java gentest 0
   ```
   The output of the program should look like the following:

   ```
   Try connecting to stores
   Connected ...
   Driver name: IBM DB2 JDBC Universal Driver Architecture
   Driver version: 3.52.95
   Database product name: IDS/UNIX32
   ```

```
Database product version: IFX11500
Prepare and Execute: SELECT * FROM INFORMIX.CUSTOMER
WHERE CUSTOMER_NUM = 101
   Getting data for row: 1
      customer_num: 101
      fname: Ludwig
      lname: Pauli
      company: All Sports Supplies
      address1: 213 Erstwild Court
      address2: null
      city: Sunnyvale
      state: CA
      zipcode: 94086
      phone: 408-789-8075
Done
```

5. To run the program using the Informix JDBC Client:

```
java gentest 1

Try connecting to stores
Connected ...
Driver name: IBM Informix JDBC Driver for IBM Informix
Dynamic Server
Driver version: 3.50.JC2DE
Database product name: Informix Dynamic Server
Database product version: 11.50.UC2DE
Prepare and Execute: SELECT * FROM INFORMIX.CUSTOMER
WHERE CUSTOMER_NUM = 101
   Getting data for row: 1
      customer_num: 101
      fname: Ludwig
      lname: Pauli
      company: All Sports Supplies
      address1: 213 Erstwild Court
      address2: null
      city: Sunnyvale
      state: CA
      zipcode: 94086
      phone: 408-789-8075
Done
```

Using PHP with IDS

The objective of this tutorial is to show you how to access and interact with IDS from PHP.

The sample code assumes that the **demo_on** instance is up and running and that the stores database is available. To make sure the server is on line, enter the following command in a terminal window:

```
onstat -
```

If the server is not on line, start it by typing the following command as user informix:

```
startDemo
```

This IDS virtual appliance is pre-configured with an Apache web server. The document root for this web server is /opt/IBM/openadmin/Apache_2.2.4/htdocs.

This PHP demonstration is called HelloWorld.php and has already been installed in the Apache web server document root at /opt/IBM/openadmin/Apache_2.2.4/htdocs. To install a PHP program, simply copy it to the Apache document root. Then access it through the Firefox browser.

The HelloWorld.php PHP demo accesses the stores database in the **demo_on** instance. Make sure that your **demo_on** instance is running before running the PHP demo.

To run the HelloWorld.php demonstration program, click the link below:

http://localhost/HelloWorld.php

Let's take a look at the sample program.

PHP is a scripting language that can be embedded into HTML documents. When the browser sees the PHP script tag, it hands the script to the PHP processor. HTML is dynamically generated by the PHP script to provide dynamic web page content.

Here is the HelloWorld.php source. Note that it starts out like any simple HTML document but then embeds a PHP script that interacts with the IDS server. Everything between the **<?php** and **?>** tags is PHP code.

This example uses the PHP PDO class to represent the connection between PHP and the IDS server. The database connection is opened when the PDO class is instantiated.

```
<html>
<body>
<?php
```

```php
try {
$db = new PDO("informix:host=ids1150srvr; service=9088;
database=stores; server=demo_on; protocol=onsoctcp;
EnableScrollableCursors=1;", "informix", "informix");
print "Hello World!</br></br>";
print "Connection Established!</br></br>";
$stmt = $db->query("select * from customer");
$res = $stmt->fetch( PDO::FETCH_BOTH );
$rows = $res[0];
echo "Table contents: $rows.</br>";
} catch (PDOException $e) {
    print $e->getMessage();
}

?>
</body>
</html>
```

The statement that begins with $db = new PDO instantiates the PHP PDO module. This establishes a connection to the IDS database, as specified by the arguments to the PHP PDO constructor. You can confirm this information with dbaccess and the information in your SQLHOSTS file.

Make sure that your environment is set correctly before running dbaccess from the command prompt. You can do this with any one of the set* convenience scripts. The dbaccess Database menu lists the databases that are available in the IDS instance. Once your environment is set up, you can see the contents of your SQLHOSTS file by typing

cat $INFORMIXSQLHOSTS

In our HelloWorld.php example, we instantiate the PHP PDO module with the argument "EnableScrollableCursors=1". This is required because the PHP PDO module does not enable scrollable cursors by default.

The last two arguments to the PHP PDO constructor specify the username and password to use when establishing a connection to the IDS server. In this example, we specify informix:informix.

Feel free to play around with the program. You can simply display data or you can interact with the user and generate dynamic web page content based on your user's response.

To test your new PHP code, simply copy your file to directory /opt/IBM/openadmin/Apache_2.2.4/ htdocs and then execute it by opening Firefox and navigating to your new web content.

For example, if your new script is called myTest.php, then you would navigate to:

http://localhosts/myTest.php.

The IDS Detective Game

The IDS Detective Game is a small SQL-based game that will help you get used to the Informix SQL language and also familiarize you with the dbaccess SQL tool.

This game includes both student and instructor documents. Use the student document as your instruction guide to the game. Use the instructor document for reference and supplimental information.

The IDS database in this IDS virtual appliance is already pre-configured for the detective game. Both the student and instructor documents contain references to a Windows based installation of IDS and the required idsgame database. Simply skip the setup section and start directly with the game.

Link to the student document here:
/home/informix/Desktop/IDS11_FirstSteps/01_IDS_Detective_Game/IDS_Detective_Student.pdf

Link to the instructor document here:
/home/informix/Desktop/IDS11_FirstSteps/01_IDS_Detective_Game/IDS_Detective_Instructor.pdf

You can start the IDSDetective Game by double-clicking the **IDS11_FirstSteps** icon on the IDS virtual machine desktop, then double-click the **01_IDS_Detective_Game** folder, then double-click the **IDS11 Detective Game** icon.