



Deploying Open Community Solutions in i5/OS

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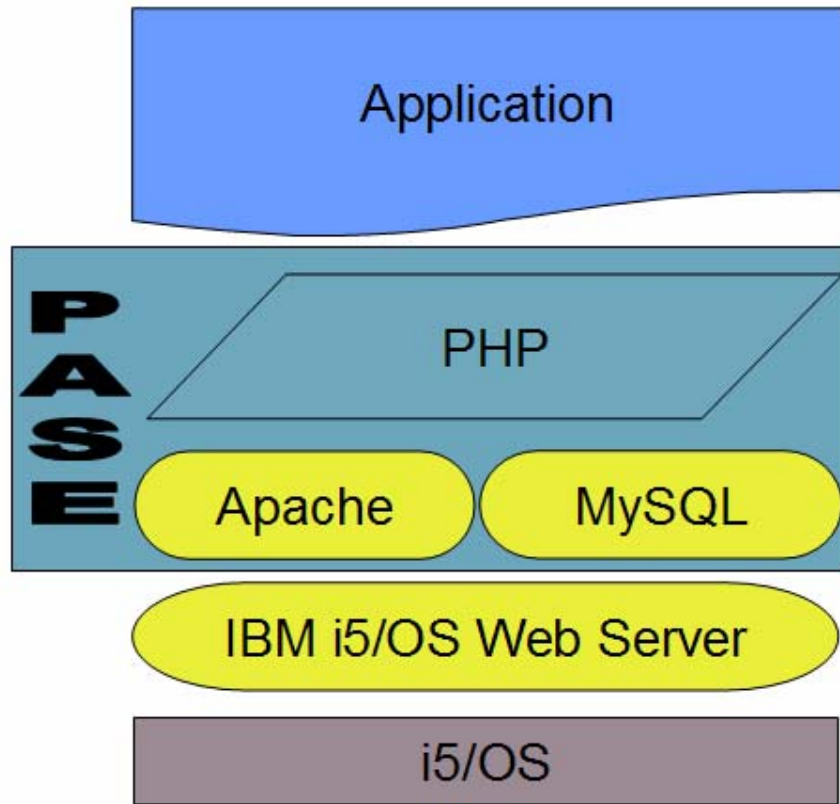
Contents

- 2 Overview
- 3 PHP in i5/OS
- 4 MySQL in i5/OS
- 4 Implementing the iAMP Stack
- 9 Deploying SugarCRM in i5/OS

Overview

The adoption of Zend's™ PHP and MySQL AB's MySQL® database engine on i5/OS provides the framework for deploying open community solutions in a wide range of areas including Customer Relationship Management, Bulletin Boards, Wikis, blogs, and others. By deploying, we refer to the ability to obtain open source applications and implement them in i5/OS without changing any of the actual source code.

MySQL and PHP in i5/OS provide an open-community supported deployment stack for web-based applications. This deployment stack is similar from a component viewpoint to the Open Community LAMP stack and can be referred to by the iAMP (i5/OS, Apache, MySQL, PHP) acronym. The following diagram shows a high-level view of this deployment stack:



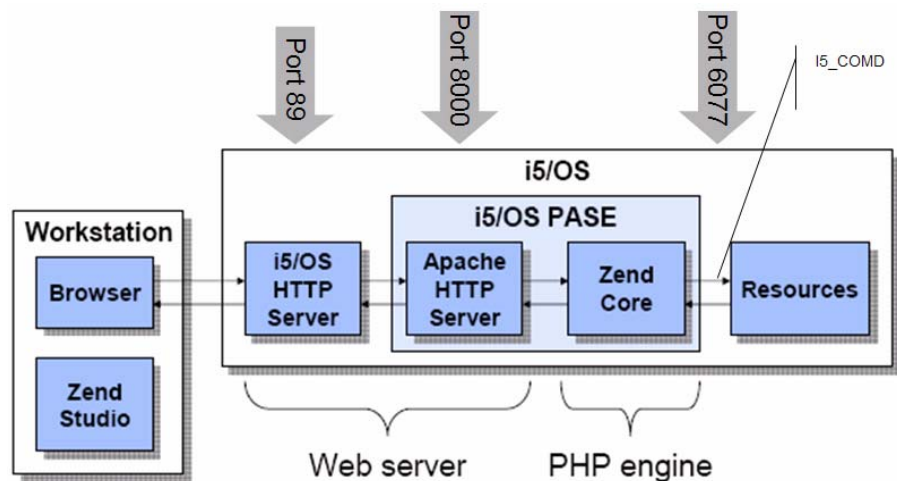
Highlights

PHP in i5/OS

This paper will walk through an example of establishing the components of the iAMP stack as well as deployment of an open community application utilizing that stack. For our example we will use SugarCRM® a popular open community solution for Customer Relationship Management. This paper will walk through the steps necessary to install Zend's PHP, MySQL AB's MySQL and finally obtaining and installing the SugarCRM application. It should be noted that the steps to install Zend Core (PHP) and MySQL would only need to be performed once to support a whole collection of open community solutions.

PHP in i5/OS

The PHP engine for i5/OS comes from Zend, Inc. and is referred to as Zend Core®. Before we walk through the steps to obtain and install Zend Core, let's first look at the architecture of PHP in i5/OS and the flow that a PHP application takes:



As you can see from the diagram, Zend Core runs in PASE (Portable Application Support Environment). Along with Zend Core, the installation process will install Apache in the PASE environment. HTML pages that contain PHP code will be sent to port 89 of the i5/OS system. Traffic received on port 89 will be forwarded to the Apache web server for processing. Whenever PHP code is identified (via the HTML PHP tag) in the HTML code stream, the corresponding PHP code will be forwarded to the Zend Core engine for processing. If the PHP code makes any requests for i5/OS resources that request will be forwarded to the I5_COMD job running in the ZEND subsystem in i5/OS. The results of execution of the

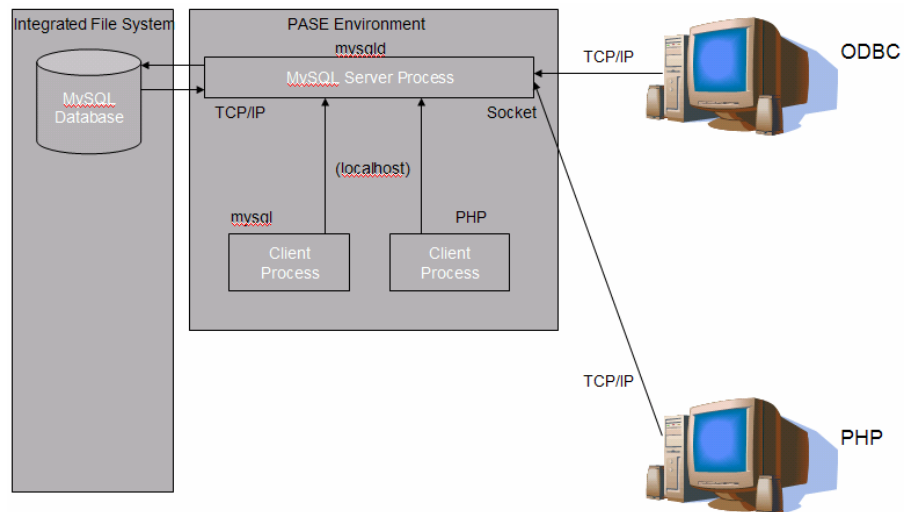
Highlights

MySQL in i5/OS
Implementing the iAMP
stack

PHP code will be sent back as HTML through the Apache web server and finally to the web browser for rendering.

MySQL in i5/OS

Just like PHP, MySQL for i5/OS (from MySQL AB) runs in the PASE environment. The following diagram provides an overview of this architecture:



Applications can integrate with MySQL data through a number of network and application interfaces. Open source applications will typically use the PHP support for integration with MySQL.

Implementing the iAMP Stack

Obtaining Zend Core

Zend Core can be downloaded from Zend's web site (<http://www.zend.com>). You will first need to register for the i5/OS product (http://www.zend.com/products/zend_core/zend_for_i5_os) at which time you will be given access to the i5/OS channel. As of Version 2.5 of Zend, MySQL is bundled with the installer so that from a single download/installation you can have the entire iAMP stack (Apache, MySQL, PHP) installed in i5/OS.

There are two installation packages available, a save-file that you can transfer and install interactively as well as a Windows Installer that will perform an automatic (or silent) installation. The steps in this white paper will use the interactive installer.

Highlights

Checking Pre-requisites
Installation Steps

The product you will want to download is 'Zend Core for i5/OS'.
NOTE: You may also want to download Zend Studio for i5/OS (or Zend Studio for Eclipse i5 Edition) if you plan to do customized PHP development; however, that product will not be needed for deployment of open community applications.

Download of Zend Core will result in a zip file on your client system. The zip file will contain several files including:

- LICENSE
- README
- RELEASE_NOTES
- Zcoresavf.savf
- Zend_Core_User_Guide_I5OS.pdf

For purposes of installation the file of interest is the 'zcoresavf.savf'. This is the file that we will upload to i5/OS and use to install the ZEND licensed product.

Checking Pre-requisites

There are a number of licensed programs that are required for the successful installation/running of Zend Core. The required licensed programs are:

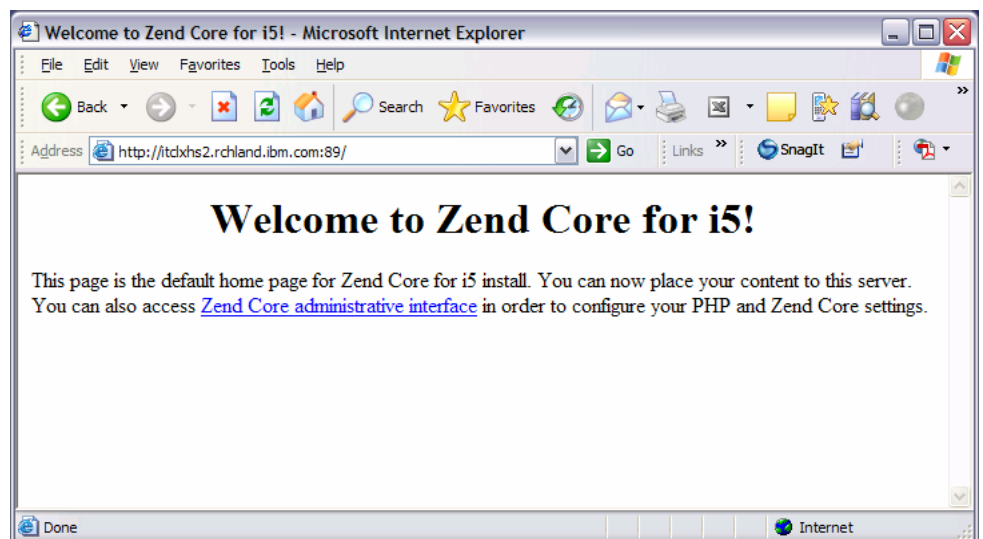
Portable Application Solutions Environment	33	5722SS1
IBM Portable Utilities for i5/OS	*base	5733SC1
OpenSSH, OpenSST for i5/OS	1	5733SC1
Qshell	30	5722SS1
System Openness Includes	13	5722SS1

Installation Steps

Once you have verified the pre-requisites you are ready to perform the actual installation of Zend Core. Here are the steps for performing the installation:

1. Extract the 'zcoresavf.savf' file from the zip file that was downloaded

2. ftp the save to i5/OS:
 - a. Enter binary mode (bin)
 - b. Change the name format (quote site namefmt 1)
 - c. Upload the file (put zcoresavf.savf
/qsys.lib/qgpl.lib/zcoresavf.savf)
 - d. Exit ftp (quit)
3. Restore the licensed program
 - a. RSTLICPGM LIGPGM(1ZCORE5) DEV(*SAVF)
SAVF(QGPL/ZCORESAVF)
 - b. During the installation the installation you will be prompted to accept the license agreement.
 - c. You will also be prompted to provide a password for accessing the web-based management application
 - d. And finally, you will be prompted for the email address and password that you used to download Zend core. This will be used to download updates for Zend Core.
 - e. After Zend Core is installed, you will receive a further prompt to indicate if you want to install MySQL
4. You can test the installation of Zend Core by pointing a web browser to the following URL: `http://<address of i5_os>:89`
The following should be displayed in the browser:



NOTE: Clicking on the "Zend Core administrative interface" hot-link will take you to the web-based administration interface for Zend Core. We will be using this interface later to enable the PHP extensions for MySQL.

Implementing SugarCRM in i5/OS

Implementing SugarCRM in i5/OS

Obtaining SugarCRM

The first step in the installation of SugarCRM is to download the product source files from <http://www.sugarcrm.com>. The result will be a zip file. Use a zip utility to unzip the file on your PC.

The results of unzipping the file will be a folder called 'SugarOS-Full-4.5.1e'. The contents of the folder need to be uploaded to the Integrated File System (IFS) of the i5/OS partition in the /www/zendcore/htdocs/sugarCRM folder.

Configuring ZendCore to support SugarCRM

There are some configuration changes that need to be made to Zend Core to support the SugarCRM application.

1. To start the administration interface of Zend Core point a web browser to the following URL:
`http://<ip address of i5/OS>:89/ZendCore`
2. Provide the ZendCore administration password
3. Select 'Configuration→Extensions' and enable the "mbstring - multibyte Character Processing" extension.
4. While still in the Zend Core administration interface, select 'Configuration→PHP→File Uploads' and ensure that the size is at least 6M.
5. While still in the Zend Core administration interface, select 'Configuration→PHP→Resource Limits' and ensure that the "Memory Limit" is at least 32M.

NOTE: Make sure to save the settings.

The Apache web server will need to be restarted for the changes to take effect:

1. In i5/OS access the zend core management menu:
`go zendcore/zcmenu`
2. Select option '5' (Service Management menu)
3. Select option '6' (Restart Apache server instances)

A change needs to be made to the configuration file for php to define where sessions should be saved:

1. In i5/OS access the location of the php configuration file:
`wrklnk '/etc/php.ini'`

Highlights

Installing SugarCRM

2. Specify option 2 to change the file'
3. Find the entry for 'session.save_path' and ensure that it reflects the following:

```
session.save_path = "/tmp"
```

If there is a comment character ';' at the start of the line remove it.
4. Save and exit the file

The Zend Core subsystem will need to be restarted for the above change to take effect.

1. In i5/OS access the zend core emangement menu:

```
go zendcore/zcmenu
```
2. Select option '5' (Service Management menu)
3. Select option '2' (Stop Zend Core Subsystem)
4. Select option '1' (Start Zend Core subsystem)

Install SugarCRM

At this point we are ready to perform the actual installation/configuration of the SugarCRM application.

1. Point your web browser to the following URL:

```
http://<system i>:89/sugarcrm
```
2. The first screen to be displayed prompts for the language. Select the language and then click on the <Start> button.
3. The second screen provides the license agreement and provides for acceptance of the agreement. Select 'I Accept' and then click on the <Next> button.

At this point the installer goes out and confirms that the environment is properly setup for SugarCRM. The following screen provides an example:

Step 2: System Check Acceptance SUGARCRM.

In order for your SugarCRM installation to function properly, please ensure all of the system check items listed below are green. If any are red, please take the necessary steps to fix them.

For help on these system checks, please visit the [Sugar Wiki](#).

Component	Status
PHP Version	Unsupported PHP Version Installed: (ver 5.1.6)
MySQL Database	OK
MB Strings Module	OK
XML Parsing	OK
PHP Safe Mode Turned Off	OK
PHP Allow Call Time Pass Reference Turned Off	OK
PHP Memory Limit >= 32M	OK (32M)
Writable SugarCRM Configuration File (config.php)	OK
Writable Custom Directory	OK
Writable Modules Sub-Directories and Files	OK
Writable Data Sub-Directories	OK
Writable Cache Sub-Directories	OK
Writable Session Save Path (/tmp)	OK

Optional Components	Status
IMAP Module	Not found: InboundEmail and Campaigns (Email) require the IMAP libraries. Neither will be functional.
cURL Module	Not found: Sugar Scheduler will run with limited functionality.
ZLIB Compression Module	OK

*Note: Your php configuration file (php.ini) is located at:
/usr/local/Zend/core/etc/php.ini*

4. Click the <Next> button.
5. The next screen is the Database Configuration screen which will need to be completed with values specific to your environment:

Step 3: Database Configuration SUGARCRM.

Please enter your database configuration information below. If you are unsure of what to fill in, we suggest that you use the default values.

*** Required field**

Database Configuration	
* Host Name / Host Instance	localhost <input type="checkbox"/> Create Database
* Database Name	sugarcrm <input checked="" type="checkbox"/> Create Database
* Database Username	sugarcrm <input checked="" type="checkbox"/> Create User
Database Password
Re-enter Database Password
Drop and Recreate Existing Sugar tables? <i>Caution: All Sugar data will be erased if this box is checked.</i>	<input type="checkbox"/>
Populate Database with Demo Data?	<input checked="" type="checkbox"/>
Use multi-byte text in demo data?	<input type="checkbox"/>
Database Account Above Is a Privileged User?	<input type="checkbox"/>
* Privileged Database User Name <i>This privileged database user must have the proper permissions to create a database, drop/create tables, and create a user. This privileged database user will only be used to perform these tasks as needed during the installation process. You may also use the same database user as above if that user has sufficient privileges.</i>	root
Privileged Database User Password	<input type="password"/>

[Help](#) [Back](#) [Next](#)

6. Once the values have been completed click the <Next> button.
7. The next screen is the Site Configuration screen. On this screen the value for "Host Name / Host Interface" will need to be changed to "http://<system i>:89 and the value for "System Name" will need to be changed to <system i>. You should also enter a password for "Sugar Admin Password":

Step 4: Site Configuration SUGARCRM.

Please enter your site configuration information below. If you are unsure of the fields, we suggest that you use the default values.

*** Required field**

Site Configuration

* URL of Sugar Instance

* System Name
This will be displayed in the Title Bar of users who visit this SugarCRM installation

* Sugar Admin Password
Caution: This will override the admin password of any previous installation.

* Re-enter Sugar Admin Password

Sugar Updates Config

Send Anonymous Usage Statistics?
If checked, Sugar will send anonymous statistics about your installation to SugarCRM Inc. every time your system checks for new versions. This information will help us better understand how the application is used and guide improvements to the product.

Automatically Check For Updates?
If checked, the system will periodically check to see if updated versions of the application are available.

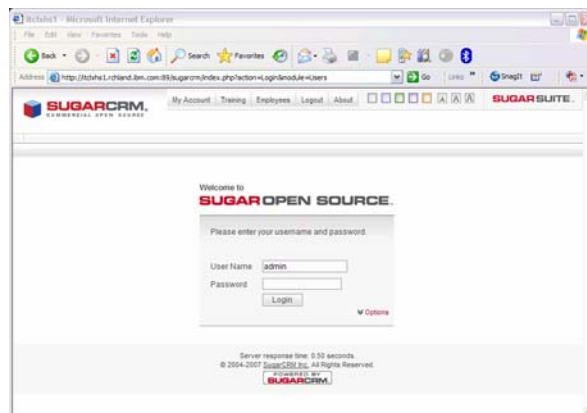
Advanced Site Security

Use Defaults?

[Help](#) [Back](#) [Next](#)

8. Click the <Next> button.
9. Complete the fields for Step 5 (Local Settings), Step 6 (Confirm Settings) and Step 7 (Perform Setup) as appropriate for your environment.

Once SugarCRM has been installed you can access the application by pointing your browser to `http://<system i>:89/sugarcrm`. The following SugarCRM login screen should be displayed:



Highlights

Summary

Summary

This paper walked through the steps for setting up the iAMP web deployment stack on i5/OS. As we showed with the SugarCRM example, once the iAMP deployment stack has been established on the system it can be used to leverage a wide range of Open Community Applications all without changing the underlying source code of the application.

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