PHP on IBM i: Getting Started

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The Omni User
7th Day of Education
Agenda

- Audience - IBM i experience and new to PHP?
- Background on PHP
- Zend Core
- Zend Studio
- Some sample scripts
- References, support and more info
- Q&A
PHP is a Scripting Language

- PHP Hypertext Pre-Processor
- Developed initially by Rasmus Lerdorf in 1994
- Zeev Suraski and Andi Gutmans Contributing since 1997+ (ZEev + aNDi = Zend)
- Interpreted, not compiled
- Forgiving and intuitive code structure (Short learning curve)
- Immediate feedback during development
- Operating model is similar to Net.Data, not as verbose
- PHP is to Java what RPG is to COBOL
Who is Zend?

- Guiding light for PHP
- Providers of stable, supported PHP distribution
- Providers of commercial tooling and support for PHP
  - Zend Core
  - Zend Studio
  - Zend Platform, more...
Zend and IBM

- Partnership began in 2005
- Zend selected by IBM to deliver PHP on IBM i
- Zend solutions pre-loaded with IBM i 6.1 and V5R4!
  - Just install the LP and go!
- You can still get products and updates at Zend.com
Why Open Source?

- Tough economic times calls for innovation
  - Low cost of entry
  - Applications of high quality
  - Lower TCO
  - Runs natively on IBM i, no need for additional hardware / OS
  - You are already using it! (Apache, Eclipse, etc.)

We’re not the only ones talking about Open Source…

Look what IBM is saying in February edition!

http://www.ibmsystemsmag.com/ibmi
The “Stack”

- Tested, certified and supported distribution of PHP
- Runs in PASE
- Home base for PHP modules like GD, PEAR, etc.
- Browser based admin console
- Accessible immediately after install
- Let’s look at the architecture of the stack
- And then installation on IBM i
Fundamental Architecture

HTTP:89 Server (Reverse Proxy)

HTTP:8000 Server

Zend Core

Zend Platform

PASE

i5/OS

PHP file

DB2 UDB

Request

Response
Please read the Installation Guide !!!

<table>
<thead>
<tr>
<th>Description</th>
<th>Product Option</th>
<th>Licensed Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portable App Solutions Environment</td>
<td>33</td>
<td>5722ss1</td>
</tr>
<tr>
<td>Qshell</td>
<td>30</td>
<td>5722ss1</td>
</tr>
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<td>System Openness Includes</td>
<td>13</td>
<td>5722ss1</td>
</tr>
<tr>
<td>IBM Portable Utilities For I5/OS</td>
<td>*base</td>
<td>5733sc1</td>
</tr>
<tr>
<td>OpenSSH ,OpenSST,Zlib</td>
<td>1</td>
<td>5733sc1</td>
</tr>
</tbody>
</table>
Install Zend Core

• Prerequisites:
  ▪ See Zend Core installation documentation!!!
  ▪ i5/OS V5R3*, V5R4, V6R1
  ▪ Recent Cumulative PTF package, PASE, QShell

• Software installation
  ▪ Windows Installation or...
  ▪ Upload *SAVF, Restore, and start coding!
  ▪ Clean installation will start the stack automatically

• Bonus!
  ▪ MySQL can be installed at the same time
  ▪ Windows based installation can include the time saving Zend Platform
Administer Zend Core

- Type GO ZENDCORE/ZCMENU, Option 5 then 1
Sample Script – Hello World

• Obligatory program when starting out
• Confirms correct setup of PHP
• Sample code: (Shortest PHP Macro around!)
• Save script in IFS /www/zendcore/htdocs/helloworld.php
• Browser URL: http://i5system:89/helloworld.php

```php
<?php
    echo "Hello World";
?>
```
Hello World
Zend Core Configuration

- Two apache servers
  - Use i5server:2001 to administer IBM server
  - Use Zend Admin to administer Zend Apache server
Zend Core Port Change?

- Default proxy points to Port 89
  - Log in to IBM Admin Server and open up ZENDCORE
  - Go to General Server Configuration
  - Click Apply & restart the server
Zend Core php.ini changes

- Manage php.ini via GUI in Zend Core
  - Log in with initial password, can reset in green screen
  - Administer all values in php.ini
  - Include path is one of many options
  - Must restart Apache in green screen for changes to take effect
• System values
  • i5_get_system_value

• Data areas
  • i5_data_area_prepare
  • i5_data_area_receive
  • i5_data_area_send
  • i5_data_area_close

• Print/Get spooled file
  • i5_spool_list
  • i5_spool_list_read
  • i5_spool_list_close
  • i5_spool_get_data
  • i5_spool_from_file

• Job logs
  • i5_jobLog_list
  • i5_jobLog_list_read
  • i5_jobLog_list_close

• Active jobs
  • i5_job_list
  • i5_job_list_read
  • i5_job_list_close

• User space
  • i5_userspace_create
  • i5_userspace_prepare
  • i5_userspace_get
  • i5_userspace_put

• Objects list
  • i5_object_list
  • i5_object_list_read
  • i5_object_list_close
Zend Studio 7.0 for IBM i

- Included for IBM i customers w/SWMA
- Essential IDE for PHP on IBM i
- Syntax checker
- Code completion
- Debugger
- Built on Eclipse framework
- Function directory
- Templates
- Much, much, more
Zend Studio 7.0 for IBM i - Installation

- Download program from Zend.com/en/downloads (i5 Edition!)
- Install to workstation (Mac, Windows, Linux)
- Follow the prompts for licensing the product
- Zend.com with QSRLNBR to license product
- Start the IDE and begin coding PHP immediately
How do I access IFS files?

- Three methods I use
  - Netserver file associations (or a mapped local drive)
    - Can be sluggish
  - Remote server configuration
    - Best for all purposes
  - WRKLNK
    - Only for emergencies!
Configuring a remote server (FTP)

- Start Zend Studio for Eclipse i5 Edition
- Click the new connection button and select FTP
- Enter system name or IP address
- Set FTP Settings for parser to Unix
Navigate to files

- Expand the tree for your system
- Navigate to the directory /www/zendcore/htdocs
- Enter user credentials and your in!
Host side change

- CHGFTPA NAMEFMT(*PATH) CURDIRE(*HOMEDIR) LISTFMT(*UNIX)

- Bounce FTP servers
  - ENDTCPsvr SERVER(*FTP)
  - STRTCPsvr SERVER(*FTP)

- If you have concerns about the host side FTP change consider the SSH method.
  - V5R4 - Will need to configure and start SSH.
  - i6.1 – Use STRTCPsvr command for SSHD
```php
<?php

// Standard DB connection to DB2...
$conn = "*LOCAL"; $name = ""; $pwd = "";
$db2link = db2_connect($conn, $name, $pwd);
if (!$db2link)
    echo 'Connection failed: '.db2_stmt_error().'

$sql = "SELECT $customer_number, $customer_name, $customer_address_line1, $customer_address_line2, $customer_city, $customer_state, $customer_zip FROM`; 

$customer_request = $db2link->prepare($sql)
if (!$customer_request)
    echo 'Prepare failed: '.db2_stmt_error().'

$customer_request->execute();
if (!$customer_request->execute())
    echo 'Execute failed: '.db2_stmt_error().'

$customer_result = $customer_request->fetchAll();
if (!$customer_result)
    echo 'FetchAll failed: '.db2_stmt_error().'

while ($row = $customer_request->fetch())
{
}
```

Basic file listing script

- Connect to DB2
- Select records from a DB2 table
- Load the records in an HTML table
- Display the output.

Customer list for a company

<table>
<thead>
<tr>
<th>Customer Number</th>
<th>Customer Name</th>
<th>Address Line 1</th>
<th>Address Line 2</th>
<th>City</th>
<th>State</th>
<th>Zip Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jimmy Buffet</td>
<td>5555 Candy Lane</td>
<td>Apt. 2</td>
<td>Chicago</td>
<td>IL</td>
<td>60694</td>
</tr>
<tr>
<td>2</td>
<td>Sherlock Holmes</td>
<td>221 Baker Street</td>
<td>Apt. B</td>
<td>London</td>
<td>EN</td>
<td>22101</td>
</tr>
<tr>
<td>3</td>
<td>Gregory House</td>
<td>221 Baker Street</td>
<td>Unit B</td>
<td>Newark</td>
<td>NJ</td>
<td>07114</td>
</tr>
<tr>
<td>4</td>
<td>Dexter Morgan</td>
<td>666 Collins St</td>
<td>Apt 13</td>
<td>Miami Beach</td>
<td>FL</td>
<td>33109</td>
</tr>
<tr>
<td>5</td>
<td>Mary Shannon</td>
<td>200 Laredo Dr.</td>
<td></td>
<td>Albuquerque</td>
<td>NM</td>
<td>87104</td>
</tr>
</tbody>
</table>
Connection to DB2 for i

- Need three things:
  - System
  - User ID
  - Password

// Standard DB connection to DB2...
$conn = "*LOCAL"; $name = "";$pwd = "";

$i5link = db2_connect($conn, $name, $pwd);
if (!$i5link)
  echo 'Connection failed: '.db2_stmt_error().' : '.db2_stmt_errormsg();

$sql = "SELECT * from zenddata.customer";

$stmt = db2_exec($i5link,$sql)
or die("Failed query:".db2_stmt_error().":".db2_stmt_errormsg());

?>
Loop through record set

```php
<h1> Customer list for a company </h1>
<table border="10" bordercolor="blue" tbody bgcolor="DEB887">
<tr>
    <td> Customer Number </td>
    <td> Customer Name </td>
    <td> Address Line 1 </td>
    <td> Address Line 2 </td>
    <td> City </td>
    <td> State </td>
    <td> Zip Code </td>
</tr>
<?php while($row=db2_fetch_array($stmt)) {
    list( $CUSTOMER_NUMBER, $CUSTOMER_NAME, $CUSTOMER_ADDRESS_LINE1, $CUSTOMER_ADDRESS_LINE2, $CUSTOMER_CITY, $CUSTOMER_STATE, $CUSTOMER_ZIP) = $row;
    echo(" <tr> $CUSTOMER_NUMBER <td> $CUSTOMER_NAME <td> $CUSTOMER_ADDRESS_LINE1 </td><td> $CUSTOMER_ADDRESS_LINE2 <td> $CUSTOMER_CITY <td> $CUSTOMER_STATE <td> $CUSTOMER_ZIP </td><td> ");
}
echo ' </table> ';
db2_close($i5link);
?>
```
What is that Zend Framework thing and how do I start using it?
Zend Framework

- Open source set of tools that provide a “use at will” framework for developing applications in PHP
  - Ready for prime time since its inception
  - Active community
  - Revisions coming frequently
  - Supported on IBM i
- Keep in mind that…
  - Object Oriented code base
  - Need to understand PHP before delving into ZF
  - Installs automatically with Zend Core
What’s coming next?

- **Zend Server for IBM i 5.0**
  - New configuration
  - More features
  - Easier stack installation
  - Optimized for framework support
  - Much, much more!

- September 2009 issue…
  - Article by yours truly page 10
    - Zend update
    - MySQL update
    - Partnership update
    - More…
Where do I go next?

• Get some HTML
  ▪ Remember, HTML is to PHP what DDS is to RPG
• JavaScript won’t hurt
  ▪ Can add pizzazz to web pages, but not required
• Download free code – see online resource slide
• Play, have fun, discover
• Education, training more  See zend.com
• Practice, practice, practice!
PHP Resources…

• Books
  - Sam’s teach yourself PHP, MySQL and Apache All in One (3rd edition) ISBN:0672328739
  - PHP User Guide available at www.zend.com
  - IBM i Programmer’s Guide to PHP on IBM i – www.MCPressonline.com
Other Resources...

- Books
  - PASE: http://www.mc-store.com/5061.html
  - Zend Framework: http://www.phparch.com/c/books/id/9780973862157
  - Head First HTML – Recommended by our CEO, Andi...
Online Resources…

• Support?
  ▪ Zend.com/forums
  ▪ Zend.com/support-center
  ▪ Zend.com/products
  ▪ php.net – on-line PHP manual (Also in Zend Core!)
  ▪ Midrange.com WEB400 forum

• Free code!
  ▪ Sourceforge.net – free applications
  ▪ phpclasses.org – free PHP code samples
  ▪ hotscripts.com – free PHP code
Zend Solutions To Bridge The Gap

IBM i Developer

- Download Core from Zend.com
- Download Studio and Apache Server

Build PHP Application
- Fast!
- Easy

Try to Deploy
- Manageability
- Scalability
- Performance
- Reliability
- SLA

Zend Core for i5/OS
- Consistent commercial versions of PHP, extensions, database drivers, libraries
- Timely updates of security patches, bug fixes, new extensions/drivers
- Configuration Management across entire production infrastructure

Zend Framework
- Pre-built components for rapid development
- Best Practices
- Iterative development cycles
- Higher deployment success rates results from rigorous testing by Zend & PHP community

Zend Studio
- Reusability
- Remote Debugging in Production
- Development best practices
- Repeatable, uniform testing
- Standards for deployment
- Root Cause Analysis
- Replicate Production problems in developer’s environment

Zend Platform
- Improved Scalability
- High performance via Caching
- Defining/measuring performance & scalability metrics
- Proactive Monitoring & Management
The Zend Smart Start service is a highly effective way to start your PHP project. During a five day on-site engagement, Zend’s experts will:

- Focused training for up to 5 students
- Install and configure your PHP environment
- Pilot project
- Transfer knowledge on PHP development and deployment best practices
Thank you!!

Questions?
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