



The PHP Company

PHP on IBM i: Getting Started

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The Omni User
7th Day of Education

The PHP Company

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



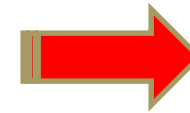
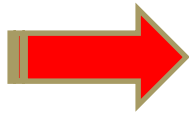
PHP is a Scripting Language

- 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?



Business
Partner



- 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



Business
Partner



- 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!

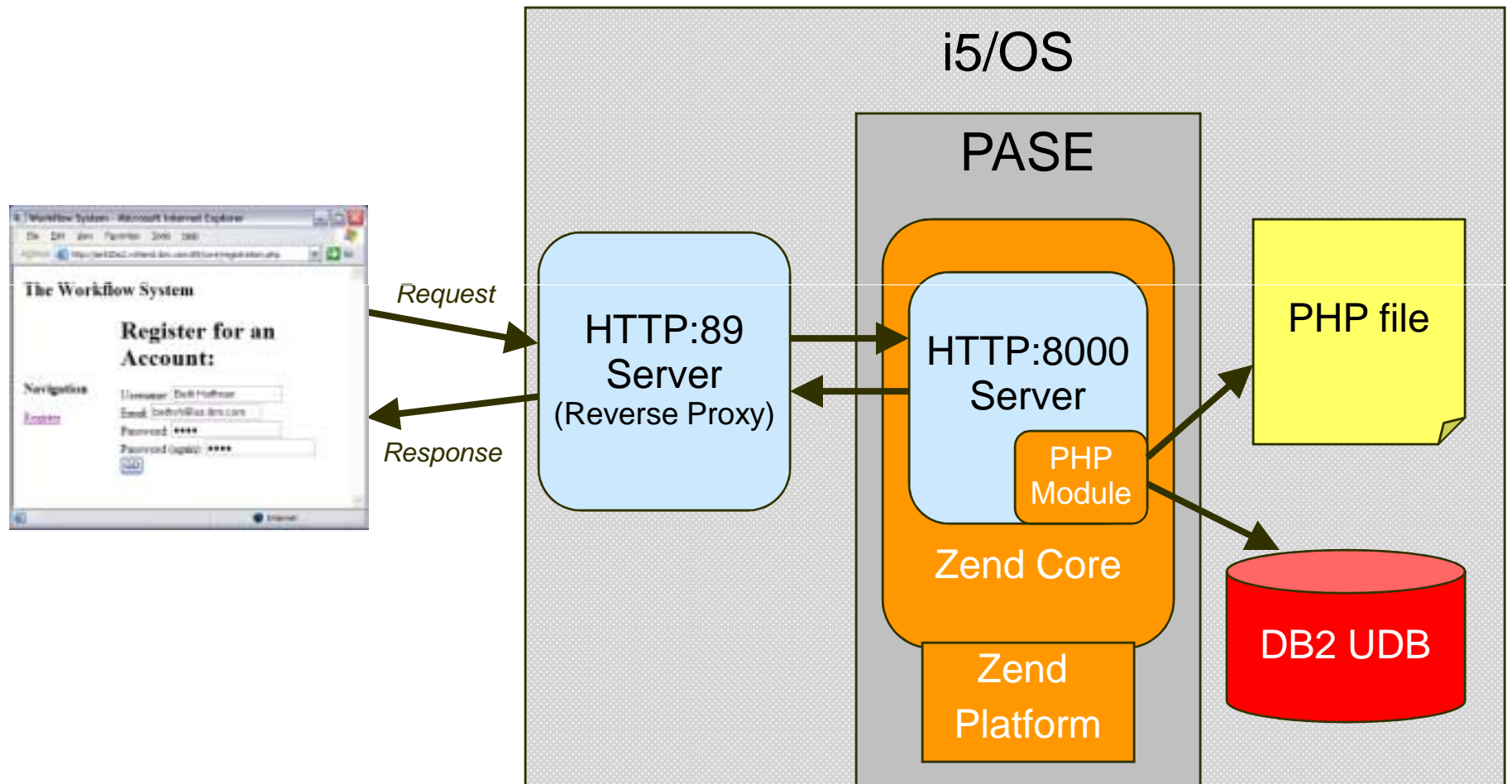
<http://www.ibmssystemsmag.com/ibmi>

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



Software Pre-req's

Please read the Installation Guide !!!

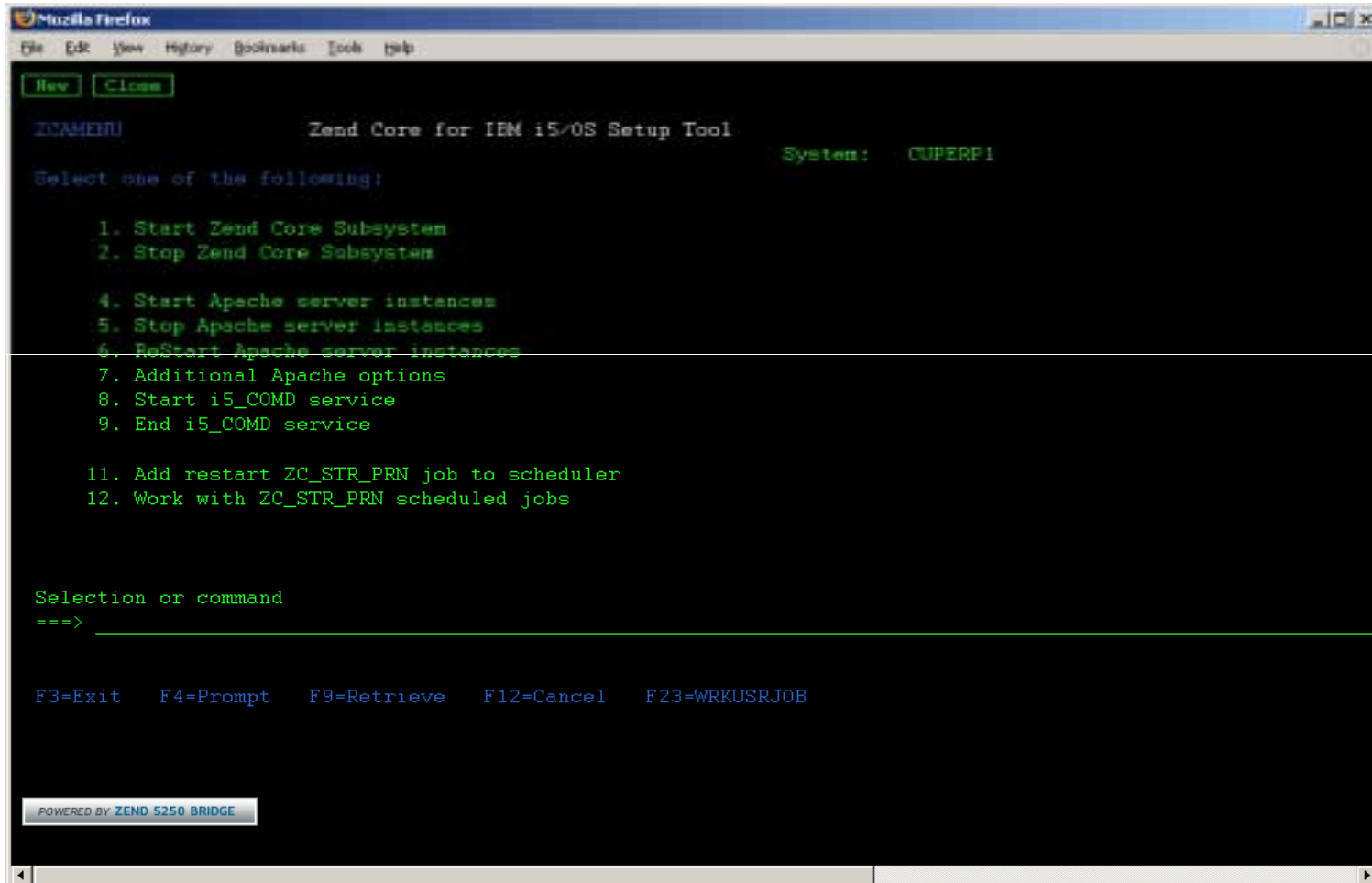
Description	Product Option	Licensed Program
Portable App Solutions Environment	33	5722ss1
Qshell	30	5722ss1
System Openness Includes	13	5722ss1
IBM Portable Utilities For I5/OS	*base	5733sc1
OpenSSH ,OpenSST,Zlib	1	5733sc1

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

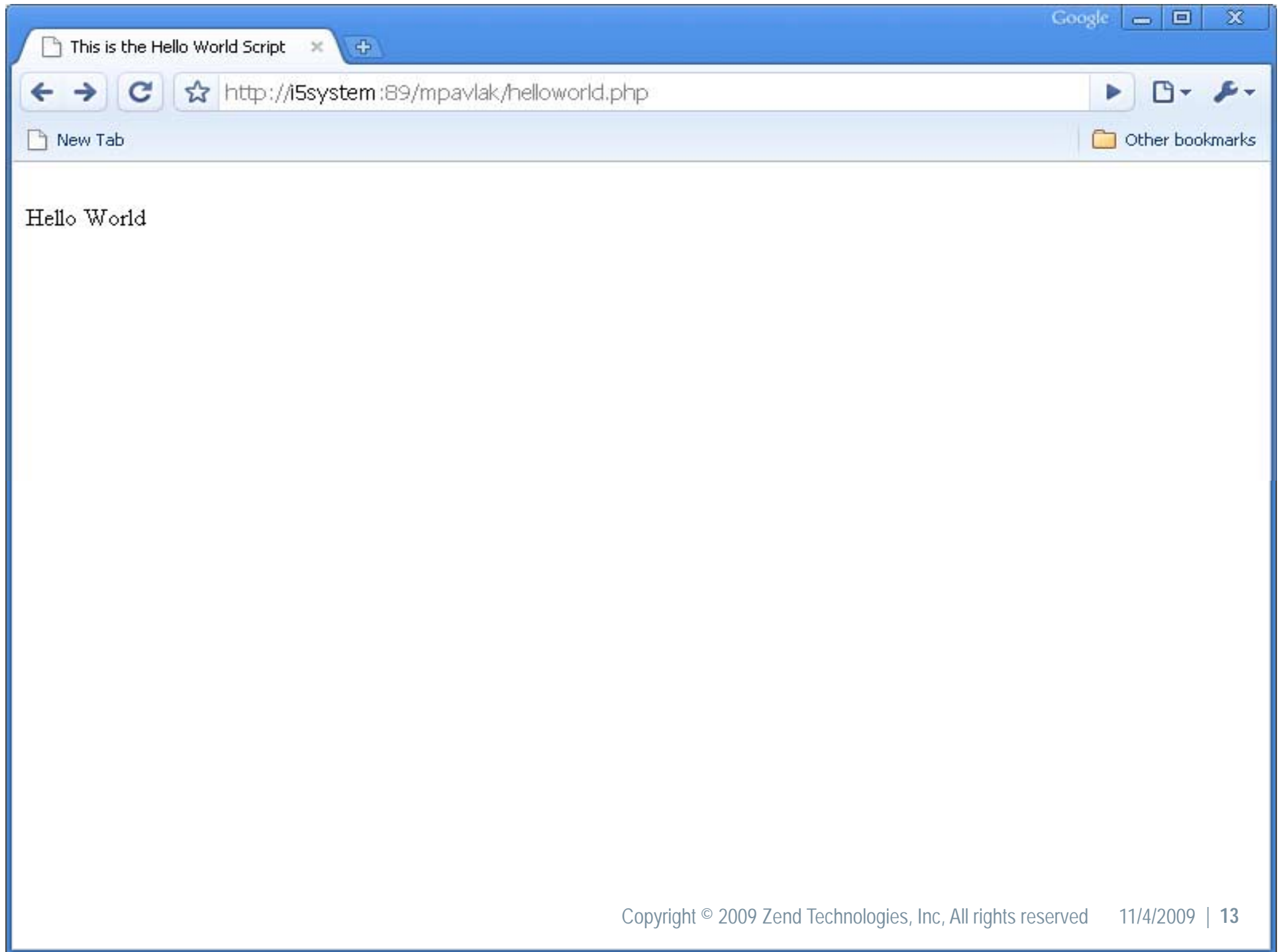


```
Mozilla Firefox
File Edit View History Bookmarks Tools Help
[New] [Close]
ZCMENU          Zend Core for IBM i5/OS Setup Tool          System: CUPERP1
Select one of the following:
1. Start Zend Core Subsystem
2. Stop Zend Core Subsystem
4. Start Apache server instances
5. Stop Apache server instances
6. ReStart Apache server instances
7. Additional Apache options
8. Start i5_COMD service
9. End i5_COMD service
11. Add restart ZC_STR_PRN job to scheduler
12. Work with ZC_STR_PRN scheduled jobs
Selection or command
==>
F3=Exit  F4=Prompt  F9=Retrieve  F12=Cancel  F23=WRKUSRJOB
POWERED BY ZEND 5250 BRIDGE
```

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
    echo "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

The screenshot shows the IBM Web Administration interface for i5/OS. The browser address bar displays `http://15server:2001/HTTPAdmin`. The page title is "ZENDCORE - General Server Configuration". The left-hand navigation pane shows a tree view of configuration options. The "Server Properties" folder is circled in red, and a red arrow points from it to the "Port" field in the "Server IP addresses and ports to listen on" table.

	IP address	Port	FRCA
Example	All IP addresses	80	Disabled
<input type="checkbox"/>	*	89	Disabled

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

The screenshot shows the Zend Core Configuration GUI. The 'PHP Configuration' section is expanded, showing a table of configuration options. A red circle highlights a warning message: 'Please Restart Apache'. A red arrow points to the 'include_path' value field, which contains the text './usr/local/Zend/Core,'.

Name	Value
doc_root <i>Root directory of PHP on the server</i>	<input type="text"/>
enable_dl <i>This directive is really only useful in the Apache module version of PHP</i>	<input checked="" type="radio"/> On <input type="radio"/> Off
extension_dir <i>In what directory PHP should look for dynamically loadable extensions</i>	<input type="text" value="/usr/local/Zend/Core/li"/>
include_path <i>List of directories where PHP looks for files</i>	<input type="text" value="./usr/local/Zend/Core,"/> ←
user_dir <i>The base name of the directory used on a home directory for PHP files</i>	<input type="text"/>

i5 Toolkit APIs

- 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
- Objects list
 - i5_object_list
 - i5_object_list_read
 - i5_object_list_close
- User space
 - i5_userspace_create
 - i5_userspace_prepare
 - i5_userspace_get
 - i5_userspace_put

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



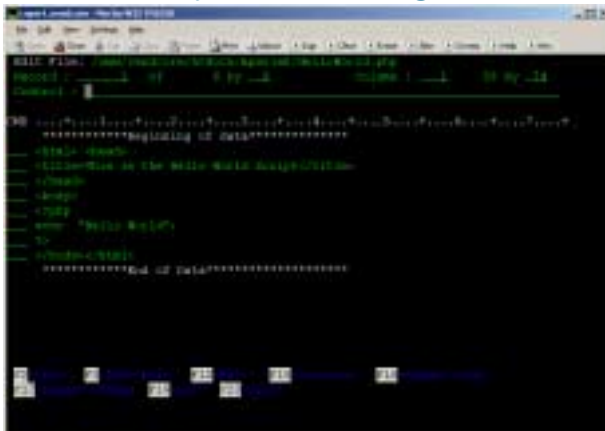
Zend Studio 7.0 for IBM i - Installation

- 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

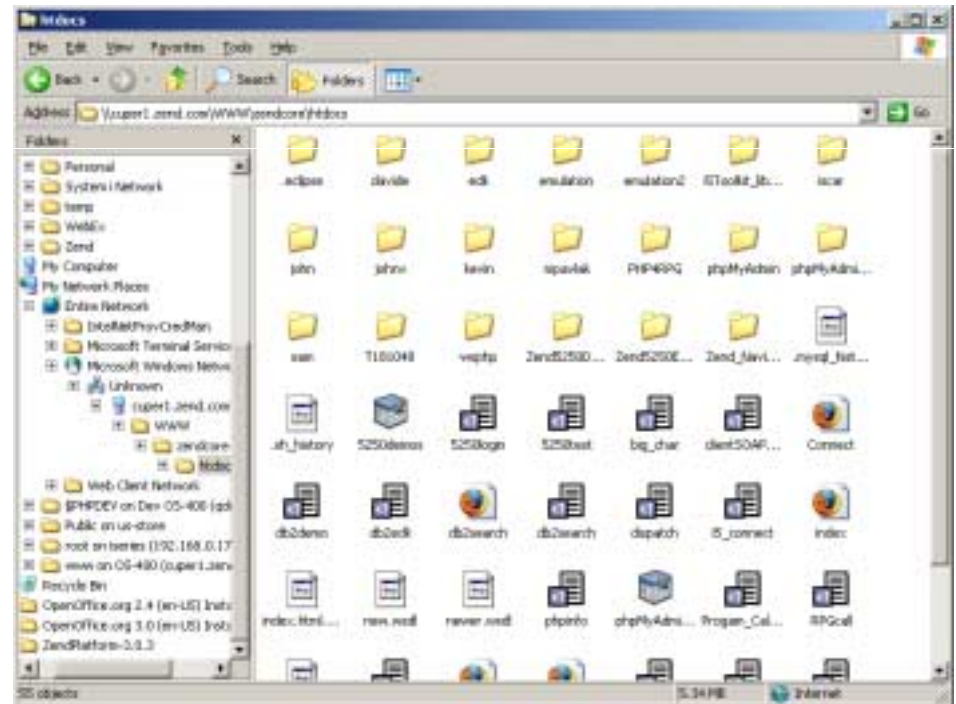


How do I access IFS files?

- 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!

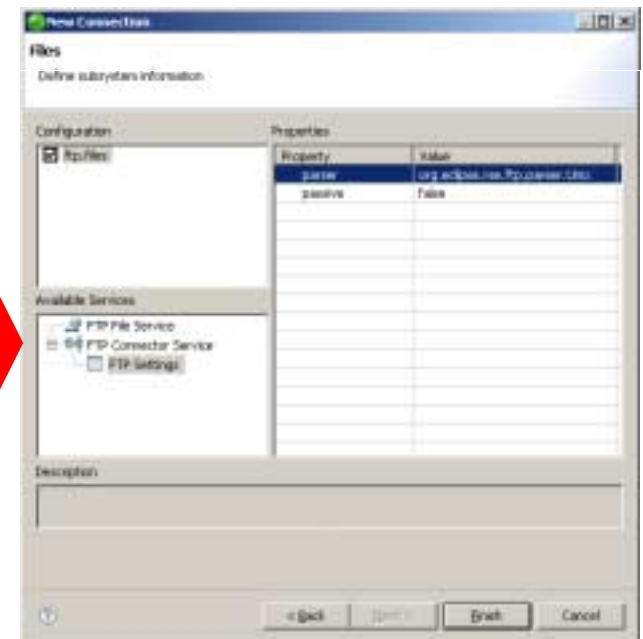
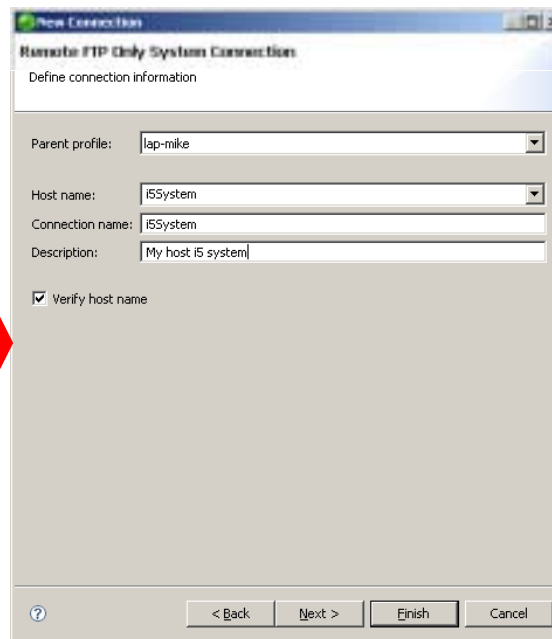
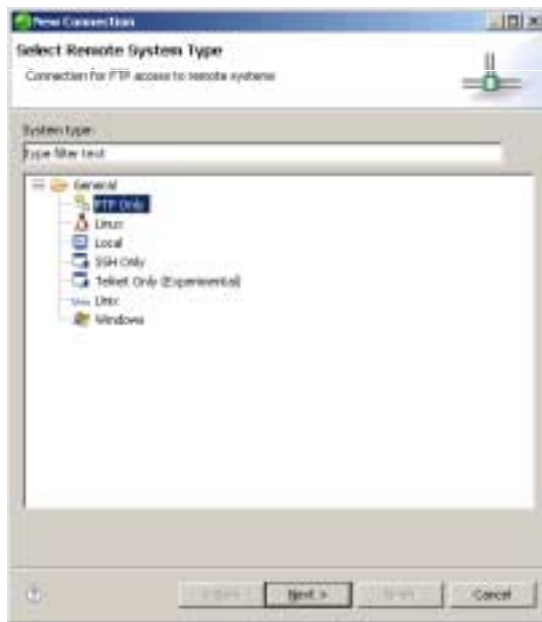


```
root@super1.zend.com: ~# net /mnt/ifs /usr/local/www/Zend/ZendPlatform-2.0.3
*****beginning of data*****
*****end of data*****
```



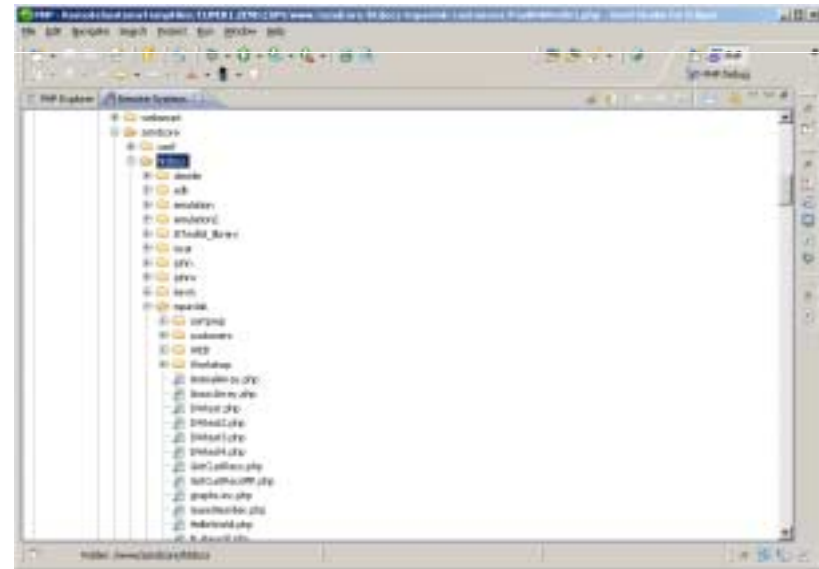
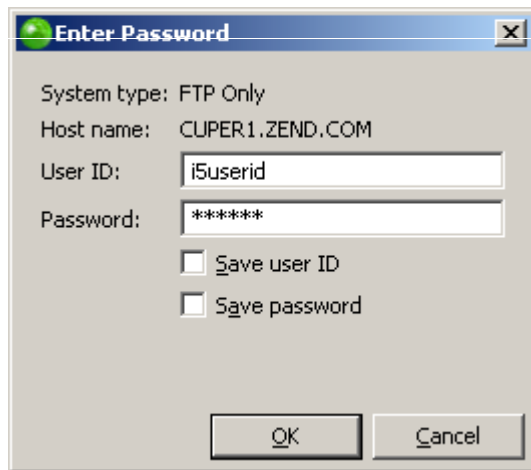
Configuring a remote server (FTP)

- 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

- **CHGFTP NAMEFMT(*PATH) CURDIR(*HOMEDIR) LISTFMT(*UNIX)**
- **Bounce FTP servers**
 - ENDTCP SVR SERVER(*FTP)
 - STRTCP SVR 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 STRTCP SVR command for SSHD

PHP - RemoteSystemsTempFiles/CUPER1.ZEND.COM/www/ZendCore/htdocs/mpavlak/ZendCustList1.php - Zend Studio for Eclipse

File Edit Refactor Source Navigate Search Project Run Window Help

PHP Expl Remote

Local
Cuper1
Files
My Home
Root
bin
davidphp
demos
dev
etc
fastemp
fixes
fr_tests
home
kevin
lib
media_library

```

1 <?php
2
3 // Standard DB connection to DB2...
4 $conn = "LOCAL"; $name = ""; $pwd = "";
5 $i5link = db2_connect($conn, $name, $pwd);
6 if (!$i5link)
7     echo 'Connection failed: '.db2_stmt_error().';
8 $i5
9 $sq
10 $st
11 OR
12
13 //
14 ech
15 ech
16
17 // loop di loop through customer recs...
18 while($row=db2_fetch_array($stmt)){
19     list( $CUSTOMER_NUMBER, $CUSTOMER_NAME, $CUSTOMER_ADI
20         $CUSTOMER_CITY, $CUSTOMER_STATE, $CUSTOMER_ZI
21     echo("<TR><TD> $CUSTOMER_NUMBER</TD> <TD>$CUSTOMER_NA
22         <TD>$CUSTOMER_ADDRESS_LINE2</TD><TD>$CUSTOMEI
23         <TD> $CUSTOMER_ZIP</TD></TR>");

```

Debug Output

Description
Fetch a row of data from the resource.

Parameters
result: resource resource resulting from operation returning data
option int[optional] flag specifying which record to fetch (IS_READ_SEEK - Current record, IS_READ_NEXT - Next record, IS_READ_PREV - Previous record, IS_READ_FIRST - First record, IS_READ_LAST - Last record).

Problems 0 errors, 3 warnings, 0 others

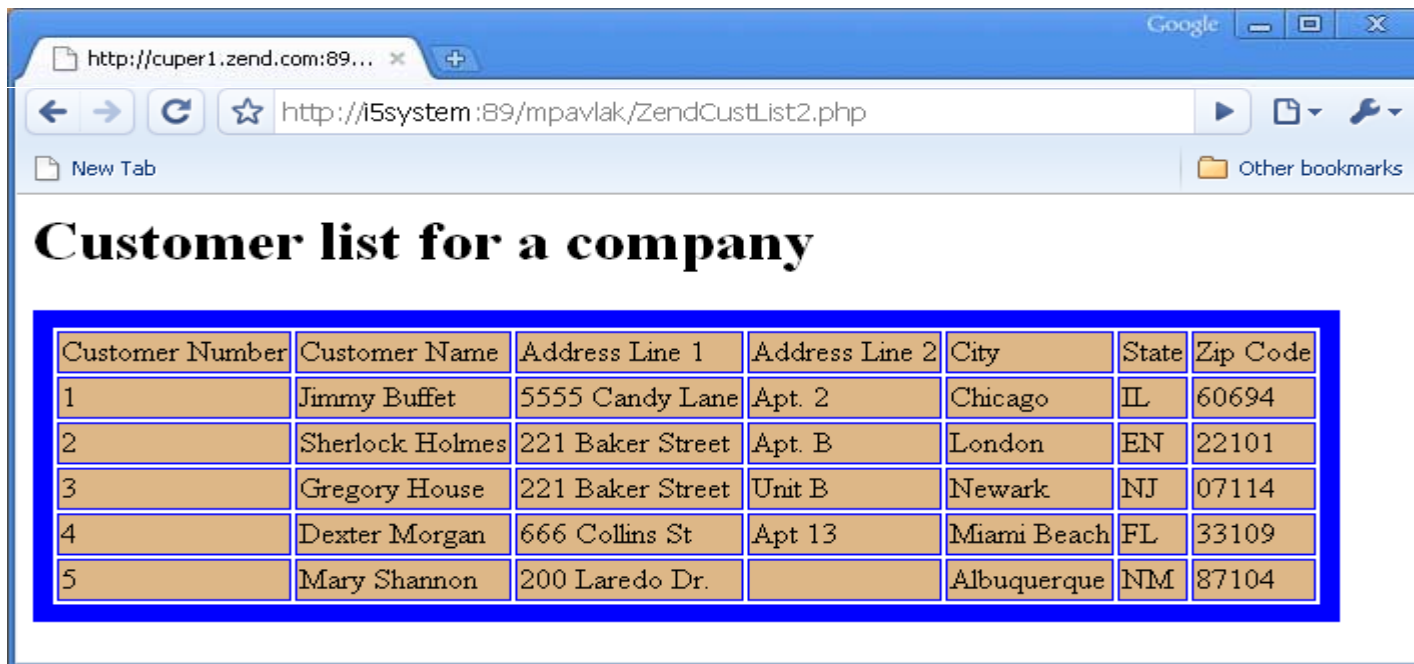
Description	Resource	Path	Location	Type
Warnings (3 items)				
bool-assign : Assignment in condition	ZendCustList1...	RemoteSystemsTe...	line 18	Code Analyzer...
expr-unused : Expression result is never u	ZendCustList1...	RemoteSystemsTe...	line 11	Code Analyzer...
var-use-before-def-global : Global variable	DebugDemo.php	ExampleProject	line 61	Code Analyzer...

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Writable Smart Insert 8 | 4

Basic file listing script

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



The screenshot shows a web browser window with the address bar displaying `http://i5system:89/mpavlak/ZendCustList2.php`. The page content includes a heading "Customer list for a company" and a table with the following data:

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

Connection to DB2 for i

- Need three things:

- System
- User ID
- Password

Note: If your data sets have *PUBLIC access, no user or password is required

```
// 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());

?>
```

Reading data...

Loop through record set

```
<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><TD> $CUSTOMER_NUMBER </TD><TD> $CUSTOMER_NAME </TD>
    <TD> $CUSTOMER_ADDRESS_LINE1 </TD><TD>$CUSTOMER_ADDRESS_LINE2 </TD>
    <TD> $CUSTOMER_CITY</TD><TD> $CUSTOMER_STATE </TD>
    <TD> $CUSTOMER_ZIP </TD></TR> ");
}
echo ' </table> ';
db2_close($i5link);

?>
```

Common question

What is that Zend
Framework thing and
how do I start using it
?

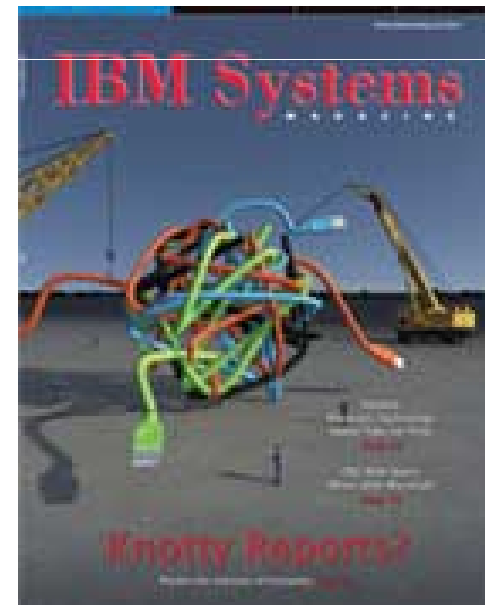
Zend Framework

- Open source set of tools that provide a “use at will” framework for developing applications in PHP
 - Ready for prime time since it 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?

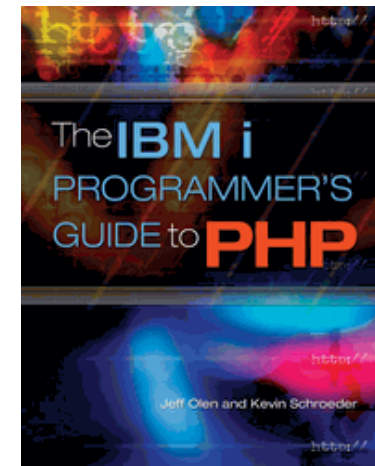
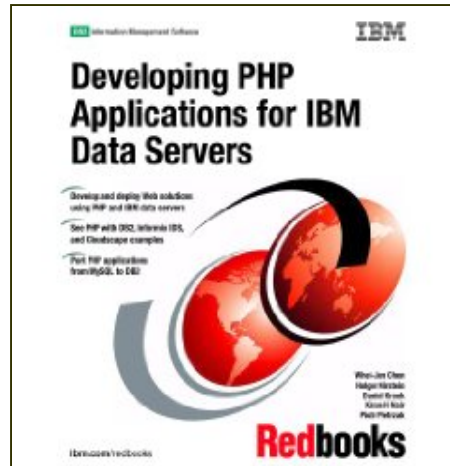
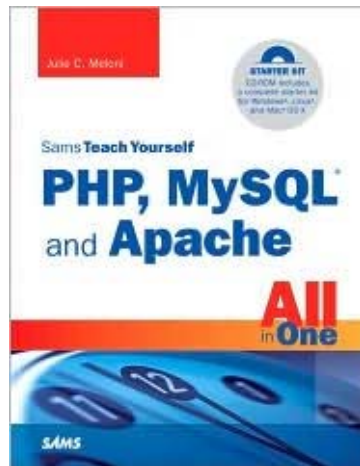
- **Zend Server for IBM i 5.0**
 - New configuration
 - More features
 - Easier stack installation
 - Optimized for framework support
 - Much, much more!
- September 2009 issue...
 - Article by yours truly page 10
 - Zend update
 - MySQL update
 - Partnership update
 - More...



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!

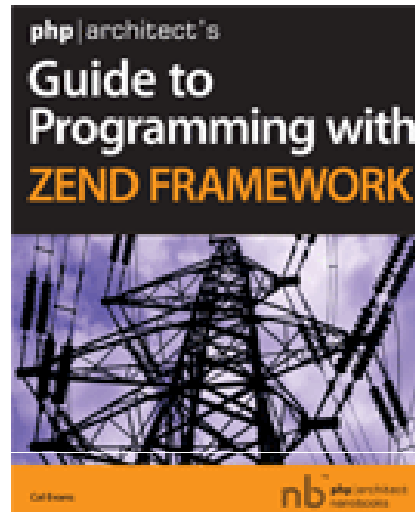
PHP Resources...



- **Books**

- Sam's teach yourself PHP, MySQL and Apache All in One (3rd edition) ISBN:0672328739
- Redbook – www.redbooks.ibm.com/portals/systemi
- 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



- 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



- 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



Zend Smart Start for IBM i – Jump Start your PHP Projects

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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