PHP on IBM i: What’s New with Zend Server for IBM i

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Announcing Zend Server 6 for IBM i
Mobile and web modernization for IBM i apps
Audience

- Used PHP somewhere else
- New to Zend PHP
- Looking to understand the strategic direction
- Need an update on “the” PHP stack for IBM i
- Anyone who does not believe third party vendors ARE investing in this space...
Agenda

- Review the IBM relationship
- Editions & features
- Technical Overview
- Product Installation
- Basic Edition Features
- Toolkit update
- Features of professional & enterprise edition
What’s New with Zend Server

www.zend.com

IBM Relationship
IBM Relationship History

• Zend is an IBM strategic business partner
• IBM selected Zend to bring PHP to IBM i in 2005
• Beta, then Core, then Platform now Server
• Thousands of downloads from Zend.com
• Zend Server 5 is part of IBM i6.1 & i7.1 (distribution media)
• Zend Server 6 will become part of the distribution, soon
• Most current products are always available at Zend.com
IBM Relationship FAQ’s

• What do we get?
  ‣ Zend Server Basic (Formerly Community Edition)
  ‣ Zend Studio (Licensed for IBM only!)
  ‣ 1 year web support and updates (email/web 72 hour response)
  ‣ Phone support & improved SLA available from Zend at a charge

• What happens after 1 year?
  ‣ Products will still run as perpetual license
  ‣ Updates and support can be purchased from Zend
  ‣ Without extended support, there is forum support
What’s New with Zend Server

www.zend.com

Editions & features
Service level (basic for only 1 year)

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<tr>
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<tbody>
<tr>
<td><strong>Support &amp; Security Fixes</strong></td>
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<td><strong>See complete SLA</strong></td>
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<tr>
<td>Support via...</td>
<td>Web Tickets</td>
<td>Phone (business hours)</td>
<td>Phone (24x7x365)</td>
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<tr>
<td>P1 response time</td>
<td>2 business days</td>
<td>6 business hours</td>
<td>2 business hours</td>
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<tr>
<td>Security hotfixes</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>PHP support</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Zend Framework support</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Long Term Support (LTS)</td>
<td>✓</td>
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<tr>
<td>Custom PHP &amp; ZF bug fixes</td>
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Different levels have different features

<table>
<thead>
<tr>
<th>Overview</th>
<th>zendServer</th>
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<tr>
<td>» Support &amp; Security Fixes</td>
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<td><img src="image2.png" alt="Icon" /></td>
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<tr>
<td>» Performance &amp; Scalability</td>
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<tr>
<td>» Development Tools &amp; Runtime</td>
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## Service Levels

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<tr>
<td>Support Hours</td>
<td>Business Hours</td>
<td>Business Hours</td>
<td>24x7x365</td>
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<tr>
<td>Phone Support</td>
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<td>✓</td>
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<tr>
<td>Web Support</td>
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<tr>
<td>Forums/Knowledgebase</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Extended PHP Version Support</td>
<td>×</td>
<td>12 Months</td>
<td>18 Months</td>
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<tr>
<td>Number of Cases</td>
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<td>Unlimited</td>
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<td>PHP Security Hot Fixes</td>
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<td>✓</td>
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<tr>
<td>PHP Critical Hot Fixes</td>
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<td>✓</td>
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<td>Remote Diagnosis</td>
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<tr>
<td>PHP Runtime/Engine Customer Requested Fixes</td>
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<tr>
<td>Zend Framework Customer Requested Fixes</td>
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<td>×</td>
<td>✓</td>
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<td>Authorized Customer Support Contacts</td>
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<td>2</td>
<td>Unlimited</td>
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<tr>
<td>P1 Phone Initial Response Time</td>
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<td>6 Business Hours</td>
<td>2 Hours, 24x7x365</td>
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<tr>
<td>P2 Initial Response Time</td>
<td>1 Business Day</td>
<td>1 Business Day</td>
<td>1 Business Day</td>
</tr>
<tr>
<td>P3-P5 Initial Response Time</td>
<td>5 Business Days</td>
<td>2 Business Days</td>
<td>1 Business Day</td>
</tr>
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Zend Server 6.2 for IBM i

Key Features

- Shipping with IBM i 6.1 & 7.1
- New Open Source Toolkit ***GA***
- Performance enhancements
- PHP 5.3, 5.4
- Zend Framework 1 & 2
- Application Deployment
- Audit features
- PTF Update as well as full package
  - Hotfix 1 for PHP Vulnerability!!!
Zend Server 6.3 for IBM i (EOM)

Key Features

- New Open Source Toolkit Library
- Performance enhancements
- PHP 5.3, PHP 5.4, PHP 5.5.7
- Last PHP 5.3 support
- Guide pages - Package distribution
  - Joomla, Drupal, WordPress
  - Magento
  - phpMyAdmin
What’s New with Zend Server

www.zend.com

Technical overview
What Is Zend Server?

- Production quality PHP stack
  - PHP, ZF2, DB connectivity, debugging extensions, and much more
- Three Editions
  - Basic Edition - Included with IBM SWMA,
    - Enjoy Professional & Enterprise features for 7 days, upgrade to 28
- Application monitoring and diagnostics (integrated with Zend Studio)
- Multi-level performance enhancement capabilities
- Easy and quick installation w/Software updates and security hot fixes
Zend Server Under the Covers

ILE Apache:10080
• Default configuration FastCGI

URL Request → HTTP:10080 Server (FastCGI) → HTML

IBM i

i/OS

PASE

PHP file

*PGM

CMD

DB2 UDB

MySQL, Oracle, MS SQL Server
Zend Server for IBM i

www.zend.com

Installation
Zend Server Installation requirements

• Can install PHP 5.3 or 5.4 (Select PHP 5.4, see www.php.net)
• Save File available at Zend.com, FTP to IBM i
• Updated Fast CGI built by IBM requires PTFs
  ‣ Best get current group for 57nnDG1 - IBM HTTP Server for IBM i
• OS Version
  ‣ i6.1 + Zend Server 6
  ‣ V5R4 - Zend continuing support of Zend Server 5.6 (No ZS6!)
    • Zend Server 5.6 is EOL by March 2014!!! Plan your migration soon!
  ‣ V5R3 - No support
Zend Server 5.x Users

- Must install Zend Server 6 side by side with 5.x
- Uses new directories
  - Copy your scripts to new directories, or
  - Use paths in /usr/local and change include path/doc root
- Uses different port 10080 rather than 10088
- Once successfully on Zend Server 6
  - Remove Zend Server 5.6 - DLTLICPGM (GO LICPGM, Option 12)
File locations

• Default Document Root
  - /www/zendsvr6/htdocs

• Zend Installation Directories
  - /usr/local/zendsvr6

• Zend Framework
  - /usr/local/zendsvr6/share/ZendFramework2

• PHP binaries (CLI and more)
  - /usr/local/zendsvr6/bin

• Deployed application root
  - /usr/local/zendsvr6/var/apps/http/__default__/0/
Apache technology options

• Web User
  ‣ QTMHHTTP

• Initial port
  ‣ 10080

• Admin Interface
  ‣ http://yourIBMiNameHere:10081/ZendServer

• WebAPI
  ‣ http://yourIBMiNameHere:10083/ZendServer

• Netstat tells all!
Update process

- User controlled PTF
- PTF available from Zend
- Updates appear in notification center
Sample scripts

• Deploy sample scripts
  - http://yourIBMiName:10080/Samples/

• Basic concepts

PHP Demo Scripts

The following demo PHP scripts will help IBM i developers get started with PHP.
Clicking on the script name will run the code and clicking on the display code will display the PHP code.
The scripts location is http://www.zend.com/htdocs/Samples/

- HelloWorld Display Code
- SQL Access Display Code
- SQL Access using Zend Framework DB2 adapter Display Code
- SQL Access to MYSQL database Display Code
- Program Call Display Code
- LDAP connection Display Code
Zend Server for IBM i
www.zend.com

Features available in all versions
Leverage investments in existing technology

- Call High level language programs via Open Source Toolkit
  - RPG
  - COBOL
  - CL programs
  - C based API’s

- Access native IBM i resources
  - Data Area
  - Data Queue
  - Spooled files
Optimizer+

Eliminates what’s not needed

- Opcode cache
  - Caches the PHP bytecode in RAM
  - Significantly reduces disk access
- Opcode optimizer
  - Optimizes certain code fragments to improve execution speed

Now part of the free Community Edition package
Data Caching

Provides a set of API functions for caching data items

- DB query results, web service calls, complex or hard-to-get data
- Output elements
- Allows skipping slow PHP code chunks
- Shared memory and Disk storage backends
- Data can be grouped using namespaces
- APC user cache compatibility layer
- Zend Framework Zend_Cache_Backend adapters
Application Deployment

Build package in Zend Studio (or download from somewhere)

- Deploy to ANY Zend Server
- Include in build
  - Pre-requisites
  - Tables
- Roll back with Enterprise license.
Zend Server Update

www.zend.com

Open Source Toolkit
XML Service

- Cross platform
- Language agnostic
- Basic plumbing for all open source languages
XML Service

• IBM has open sourced XMLService.
• Second Open Source project on IBM i.
• Made up of RPG, CL and DB2 stored procedures (SQL)

• Tony Cairns, IBM Rochester
Toolkit Project Management

• Get requests to Alan
• In process of migrating to GiT
• Distribution in 6.3 as library
• Included with Linux/Windows distro

• Alan Seiden, SBS & alanseiden.com
Source Code on YiPs...for now...

- http://youngiprofessionals.com/
Now the program call

- Set parameters based on function
  - Call program
  - Output results

```php
$param[] = $ToolkitServiceObj-&gt;AddParameterChar('both', 10, 'CODE', 'CODE', $code);
$param[] = $ToolkitServiceObj-&gt;AddParameterChar('both', 10, 'DESC', 'DESC', $desc);
$result = $ToolkitServiceObj-&gt;PgmCall("COMMONPGM", "ZENDSVR", $param, null, null);
if($result){
    showTable( $result['io_param']);
} else
    echo "Execution failed.";
```
Documentation has been updated!

Current version

• Zend Server 6 includes
  ▸ PHP Toolkit version 1.5.0
    • Data Area support
    • Better error reporting (access to CPF)
    • changeCurrentUser method
  ▸ XML Service version 1.7.8
    • More and more performance improvements
      - Stateless
      - Private connections, etc.
What’s new in PHP?
PHP is a moving target

- Deprecation cycle
  - 2 releases then gone
  - Important to stay current
  - Update pages at php.net
PHP 5.3 - June 2009

• Seems like it only just arrived
  ‣ Community in process of sunsetting

• Major enhancements
  ‣ Namespaces
    • Like activation groups for OO-PHP
  ‣ Date Time object
    • Incredible support for manipulating dates
  ‣ Mail function supports logging (ahem, Mr. Snowden)
PHP 5.3 - Continued

• Date Time Object
  - $date = new DateTime();
  - echo $date->format('l, F jS, Y');
    - output: Thursday, May 28th, 2009

  - $date = new DateTime('next Thursday');
  - echo $date->format('l, F jS, Y');
    - Output: Thursday, June 4th, 2009
PHP 5.4 - March 2012

• Support for OO-PHP Traits

• Short syntax for array processing
  ‣ $a = [1, 2, 3, 4];
  ‣ $a = ['one' => 1, 'two' => 2, 'three' => 3, 'four' => 4];

• Closures now support $this

• Session extension track file upload process

• <?= always available regardless of php.ini setting
PHP 5.5 - June 2013

- Generators
- Finally keyword added to try-catch block
- New and easier Password Hashing API
- List support in Foreach
  - foreach ($array as list($a, $b))
- Array and String dereferencing
- Opcache extension added
- Apache 2.4 for Windows (Ubuntu)
- Improvements to GD extension
Deprecation

• PHP5.3
  ▸ Magic quotes
  ▸ Ereg()*
  ▸ Call time pass by reference
  ▸ Many, many more...

• PHP5.4
  ▸ Mcrypt_generic_end()
  ▸ Mysql_list_dbs()

• PHP5.5
  ▸ Original MySQL extension is now deprecated (Procedural)
  ▸ Preg_replace() /e
Zend Server 6 for IBM i

www.zend.com

Professional & Enterprise Edition
Features
Application Monitoring

Zend Server Monitor will watch your application for:

- PHP Errors (including warnings, notices, uncaught exceptions…)
- Failing functions (user-defined or internal)
- Failing DB queries
- Slow functions (user-defined or internal) or DB queries
- Slow request executions
- High memory consumption
- Errors reported by Zend Server components

When an issue is detected, Zend Server reports an event and takes the “Dump” every time!
But wait, there’s more!

- Rules by application
  - Give Important applications higher settings
  - Event notification
- Zend Server support only one instance per LPAR
- If you can only have one LPAR define app as production
- And define another as Development
- And now you can separate the rules!!!
Page Caching

Don't execute a single line of PHP if you don't have to

- Caches entire HTTP response
- Configured from UI, no code changes required
- Live / cached decision is based on request or session parameters
- Variants can be created based on request or session parameters
Page Caching

Define a Web page to cache by building the URL in the entry fields. Use the URL of the page you want to cache. You can also add conditions that can further pinpoint what to cache.

1. Cache if URL is exactly

   http(s):// myserver / myApplication/

2. Cache if at least one of the following queries are true

   _SESSION
   _GET
   _SERVER
   _SESSION
   _COOKIE

   login
   does not exist
Zend Server 6 for IBM i

www.zend.com

Code Tracing
Code Tracing Supported Workflows

- **Monitoring workflow:**
  - When a monitoring event is created, the associated trace data of the specific request is captured
  - Trace data is attached and associated to the monitoring event

- **Manual tests/functional workflow:**
  - Manually through the GUI or from a browser by adding a parameter to the request

- **Production workflow**
  - Can be activated automatically in case of a Zend Monitoring event, for example a PHP error, a slow execution or high memory usage
Code Tracing Enhancements since last demo

• We are working this stuff pretty hard 😊
• Toggle Critical path display
• Toggle Memory display
• Arguments display
Zend Server 5: Technical Overview

www.zend.com

Job Queue
Job Queue allows you to...

- Put certain tasks into a separate execution queue
  - Off-load to new process (or defer to a later time)
  - Off-load to a different server
- Execute certain tasks at a specified time
  - Distribute processing load to off-hours
- Execute certain tasks periodically
- While..
  - Maximizing reuse of existing infrastructure & code
  - Making sure nothing falls between the cracks
  - Doing it all from a PHP API
Creating Jobs

• Jobs are created using the `createHttpJob()` method

```php
$queue = new ZendJobQueue();
$queue->createHttpJob('http://backend.local/jobs/somejob.php');
```

• Pass parameters
  
  ‣ Simple ones, via query string `$_GET`
  
  ‣ Complex ones, as an associative array of key => value pairs

• Set job options
  
  ‣ Name, priority, schedule, etc.
  
  ‣ Create deferred or recurring jobs

• Or... create from the UI
Resources

• Recorded Webinars

• Zend Server for IBM i main page, link to downloads

• Zend Server manual:
Join us at
ZendCon US/EU
The “must attend” events for the PHP Community

Conference Tracks

- Professional PHP Development
  Best practices for enterprise architecture, development, and management.

- Mobile-first Development
  Techniques for building web technology based mobile apps and rich dynamic back-ends in PHP.

- Cloud-based Applications
  Building, deploying and managing PHP applications in the cloud.

Are you ready for more?

More information coming soon.

- Visit http://europe.zendcon.com or http://www.zendcon.com
- follow @Zendcon or @Zendcon_Europe on Twitter.
- All day track for IBM i & IBM i performance tuning workshop by Alan & Mike

www.zend.com
Thank you & Q&A

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Please fill out your Session Evaluation!