

PHP on i

"the stack," web security, programming & applications

The OMNI PHP on IBM Power Systems SIG

Tuesday, January 26th, 2010

what we'll cover...

- “the stack”
- web security
- programming
- applications

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“the stack”

- what is “the stack” ?
- a standard execution environment
- OS, webserver, database, language
 - i5/OS, Apache, MySQL, PHP or...
 - iAMP for short!

stacks abound!

- LAMP ~ Linux, Apache, MySQL, PHP
- WAMP ~ Windows, Apache, MySQL, PHP
- XAMPP ~ Win/Lin, Apache, MySQL, PHP
- MAMP ~ Mac OS X, Apache, MySQL, PHP
- WIMP ~ Windows, IIS, MySQL, PHP

local stacks

- local development stacks
 - a laptop “scratch” environment
 - download & install
 - access docs at “localhost”
 - XAMPP, WAMP, MAMP etc.

remote stacks

- remote deployment stacks
 - iAMP ~ Zend Core ... Zend Server
 - LAMP ~ your server, hosting plan, etc.
 - always connected at www.domain.com

stacks on i

- we're currently using Zend Core
 - remote stack, installed by Mike P. & Joe T.
- Zend Server is in beta & coming soon...
 - smoother installs, more like other stacks

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starting with stacks

- simplest to install a local stack
- download stack & run installer
- preconfigured components
- run HelloWorld & go from there...

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local dev stack

- start with a local stack installed on your personal machine
- speed process by installing a stack such as WAMP, XAMPP, or MAMP
- install all at once into a "sandbox" setup that can be accessed from a browser using "localhost" addresses

you can also...

- install the components of the stack individually, which allows...
- compiling components at specific releases
- including modules to extend components
- such installations beyond current scope

remote deployments

- same stacks, different purpose
- installed on server, up round the clock
- your production “target” stack
- after install & a few tweaks, we’re running PHP examples and Drupal

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what does stack do?

- it handles web requests
- http = hypertext transfer protocol
- request received, response sent
- static, then dynamic, then database driven
- some examples...

static http request

- browser http request received by Apache
- Apache retrieves requested document from file system (IFS)
- Apache returns requested document to browser

dynamic http request

- browser http request received by Apache, retrieves from file system (IFS)
- Apache encounters php code, passes to PHP engine for execution
- PHP executes, returns result to Apache
- Apache merges dynamic result into document, returns it to browser

dynamic database

- like dynamic, but when evaluating php...
- PHP engine finds MySQL statements, runs them against configured database
- PHP results including database information returned to Apache
- Apache returns document to browser

local stack demos

- Matt on XAMPP ~ startup, HelloWorld
- Pat on WAMP ~ startup, HelloWorld
- Jerome on MAMP ~ startup, HelloWorld

edit as you please

- since web files are text...
 - use text editor of your choice
- or graduate to an IDE...
 - Zend Studio 7.1 for IBM i
 - Eclipse based, similar to WDSc/RDi

scripts served...

- from web root (www, htdocs folder)
- locally, save to web root
- remotely, save & FTP to web root
- using IDE, set up connection to upload to web root when script file saved

communication tools

- SIG sessions were in person at first
- then with Mike remote, used a Webex
- since have met remotely using...
 - Skype (free conference calls)
 - Mikogo (free screen sharing)

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questions?

web security

- web an open range
- some visitors are not your friends
- learn to secure stack before exposing it
- they have ways of finding you

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permissions

- like object authorities, but... different
- be sure you've got 'em set right
- not enough granted, won't work
- too much granted, will get hacked

web server user

- create user specifically for web server use
- give this profile only needed permissions
- protect against exploits by denying writes

iAMP configuration

- done from green screen emulator, mostly
- WRKLNK for IFS
- call QP2TERM for Unix commands
 - terminal interface for PASE
 - PASE is (partial) AIX runtime on i

MySQL configuration

- first change dir to where MySQL lives
 - `cd /usr/local/mysql/bin`
 - most MySQL functions can be run here
 - if you see it in a (red) book...
 - Discovering MySQL on IBM i5/OS
 - <http://www.redbooks.ibm.com/>

logging on to MySQL

- `mysqladmin -u root status`
- set root password for public stacks!
- create database users
 - webserver user
 - developer users

logged on to MySQL

- `mysqladmin -u root ping` (mysqld is alive)
- `use MySQL;` (the database's database)
- create new database(s) for development or installation of apps
 - `create database <dbname>;`
- simpler to use... PHPMyAdmin

core, platform, server

- Zend Core ~ original PHP runtime
- Zend Platform ~ administration tools
- Zend Server ~ next gen, combines both Core & Platform, adds more
 - jobq, code trace, big performance gains...

Zend Core

- demonstrate our QZ command
- shows our iAMP stack running on i

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monitoring Zend Core

- wrkactjob on sbs zend, qhttpsvr, zmysql
- QZ shows our iAMP stack running on i
- watch & learn what jobs should be in each
- httpd jobs in zend, zmysqld in zmysql
- zendcore/zcmenu for manual starts/stops

who's this NOBODY?

- our default Zend Core PASE user
- everything from browser is served by jobs running as NOBODY
- so give NOBODY only what's needed

setting MySQL root

- `mysqladmin -u root password '<value>'`
- save in safe place (like QSECOFR)

specifying password

- after you've set root, need to log on
- `mysqladmin -u root --password=<value>`
- or better...
- `mysqladmin -u <acct> --password=<value>`

adding a user

- `mysql -u <acct> --password=<value> mysql -e "insert into user (host, user, password) values ('%', '<newacct', 'newvalue')"`
- or use PHPMysqlAdmin...

grant privileges

- giving it all away...
- `mysql -u <acct> --password=<value> mysql -e "grant <some privileges> on *.* to '<newacct>'@'%' identified by '<newacct>' with grant option"`
- consult documentation to understand what you might prefer for <some privileges>...

flush privileges

- makes updates take effect on running DB
- `mysql -u <acct> --password=<value> mysql -e "flush privileges"`

using MySQL monitor

- `mysql -u <acct> --password=<value>`
- `mysql>` (command line)
- terminate commands with “;”
- use `mysql;`
- `select user, password from user;`

updating passwords

- `UPDATE mysql.user SET Password=PASSWORD('<value>') WHERE User='<acct>';`
- `FLUSH PRIVILEGES;`

establishing Drupal

- installation of codebase via FTP, but...
- install script won't run, not much error...
- turns out... permissions outstanding
- shell commands revised them...

other admin tasks

- but we're programmers!
- still need to provide for backups
- save directory structure and contents
- also database restore script
- check application recommendations

questions?

pizza!

programming

- start with HelloWorld.php
- then return to admin world with `phpinfo()`;
 - but don't leave it showing!
- enhance HelloWorld.php while doing basic PHP coding exercises
- this isn't all that different, and...

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understand & demo

- try out language constructs
- wonder, adjust, revise... it's the same stuff
- lots of nice functions to make things easier
- great function library documentation
- look before you write!

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work together

- we're doing so
- ask questions, research answers (google it!)
- view the source in the browser (!)
- keep & tend an open issues list
- follow a guidebook

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programming demo

- language construct basics
- much is the same, so...
- what's different from what we're used to?

http interactions

- browser introduces a world of forms and widgets
- stateless, intermittently connected
- start with simple html & build on it
- hidden form variables
- retrieving POST variables

starting with forms

- .html doc with `<form>` `</form>` elements
- .php script to handle form POST request

single script forms

- includes html text creation in script
 - assembles html in variable
 - or puts/prints html to stream
- is this first or subsequent execution?
 - first ~ displays entry form
 - subsequent ~ processes form request

forms handling MySQL

- initialize database
- issue database commands
- handle result sets with array functions
- as complexity builds...
- learn to use objects

questions?

applications

- thus far we've worked with Drupal
- later interested in SugarCRM
- many open source applications available
- want to look into one with the SIG?

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Drupal basics

- Drupal = Content Management Framework
- flexible website construction toolkit
- modules & themes provide simple extensions to do more complex things

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Drupal experience

- investigated Drupal 1st on MAMP / XAMPP
- prototyped sites to replace manual sites
- so felt able to “give it a go” on i
- delayed by permissions issues
- had to use ProxyPreserveHost On directive in Apache httpd.conf (Zend Core issue)

installed Drupal

- no different than on local stack
- started building out a SIG site at...
 - <http://www.theomniuser.com/drupal>
- doesn't yet have an email server...
 - so have to set password after new user signup, can't yet get signup emails

using Drupal

- simple but structured out of box
- support for users, roles, privileges
- all content is nodes
- start with content types Page & Story
- build out menus while adding Pages

theomniuser.com/ drupal

- demonstrate site as it is today
- anonymous, menus, pages, logon
- maintenance ~ adjust page title, menu name
- add new SIG only page on nav menu
- logoff, SIG page not shown

learning Drupal

- recommend “Using Drupal” (O’Reilly)
 - intro and case studies galore
 - not programming, but deploying the application in different ways
 - adding custom content types with additional fields, etc...

multi-site experiments

- share base, module and theme code between multiple instances
- allows “virtual” sites for variations and experiments
- we’ve yet to get to this one...

module wonderland

- “there’s a module for that”
- or maybe more than one
- so need to learn about them and evaluate
- drupal.org and google about candidates
- test before deploying

our modules thus far

- **Content Access**
 - Provides flexible content security
- **Administration Menu**
 - Provides dropdown admin menus

adding modules

- demonstrating add of Admin menu module
- since there, turn off & remove
- download, unpack, upload, set privileges
- turn on module, give to Admins

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soon to come...

- IMCE & FCKEditor
 - image uploading & WYSIWYG editor
- CCK & Views
 - custom content types with fields
 - flexible content retrievals (Drupal query builder)

flexible themes

- download themes like modules
- choose something close
- make simple overrides with CSS
- other overrides with template files
- lots of free & paid themes, customizers

theme demo

- show theme list
- adjust default theme
- change it back

simpler user entry

- demo Matt's site with IMCE & FCKEditor
- upload image
- create post with WYSIWYG editor

manage events

- demo Jerome's site with Calendar & Event modules
- add event, show on list

resources

- if wondering, google it (fallback default)
- if you're stumped, ask us about it!
- Mocha emulator www.mochasoft.dk
- Zend Studio IDE www.zend.com

books

- PHP, MySQL and Apache All in One
 - Julie C. Meloni, SAMS Teach Yourself
- Using Drupal
 - Angela Byron et al, O'Reilly
- IBM i Programmer's Guide to PHP
 - Jeff Olen & Kevin Schroeder, MC Press

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sites

- google.com (questions?)
- w3schools.com (html, css... tutorials!)
- php.net (language doc, function guide)
- opensourcecms.com (application directory)
- drupal.org (project, documentation)
- drupaltherapy.com (video tutorials)

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meetup groups

- OMNI PHP on Power System SIG!
- Fox Valley Computing Professionals
- Fox Valley Drupal Meetup
- West Suburban PHP Meetup
- find these groups and more...
- <http://www.meetup.com>

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to interact with us...

- download these tools...
 - www.skype.com
 - www.mikogo.com
- email us to be included!
- we'll announce more going forward...

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