

Performance Tips & Tricks for Zend Framework 2 Applications

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About

- **Name: Slavey Karadzhov (Славей Караджов)**
- **PHP programmer since 1999**
- **Working for Zend Technologies since 2008**
 - In Stuttgart, Germany
 - As a senior consultant, trainer and programmer
- **Member of**
 - Zend Framework Education Advisory Board
 - Certification(s)
 - Study Guide(s)
- **Author of the book “Learn ZF2”**



Audience

- Advanced PHP programmers
- Intermediate or advanced ZF2 programmers

Feedback

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Performance VS Good Structure

and how to have the best of both worlds

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Performance vs Good Structure

- Performance is about speed
- Good Structure is about:
 - Code Reusability
 - Code Maintenance
 - And (much) more
- Some say:
 - Good structured code cannot be performant?!

Performance vs Good Structure (2)

```
<?php  
print "Hello World";
```

Performance vs Good Structure (2)

Controller in ZF2:

```
<?php
namespace <module name>\Controller;

use Zend\Mvc\Controller\AbstractActionController;
use Zend\View\Model\ViewModel;

class HelloController extends AbstractActionController
{
    public function worldAction()
    {
        $message = $this->params()->fromQuery('message', 'foo');
        return new ViewModel(array('message' => $message));
    }
}
```


A Few Words About ZF2

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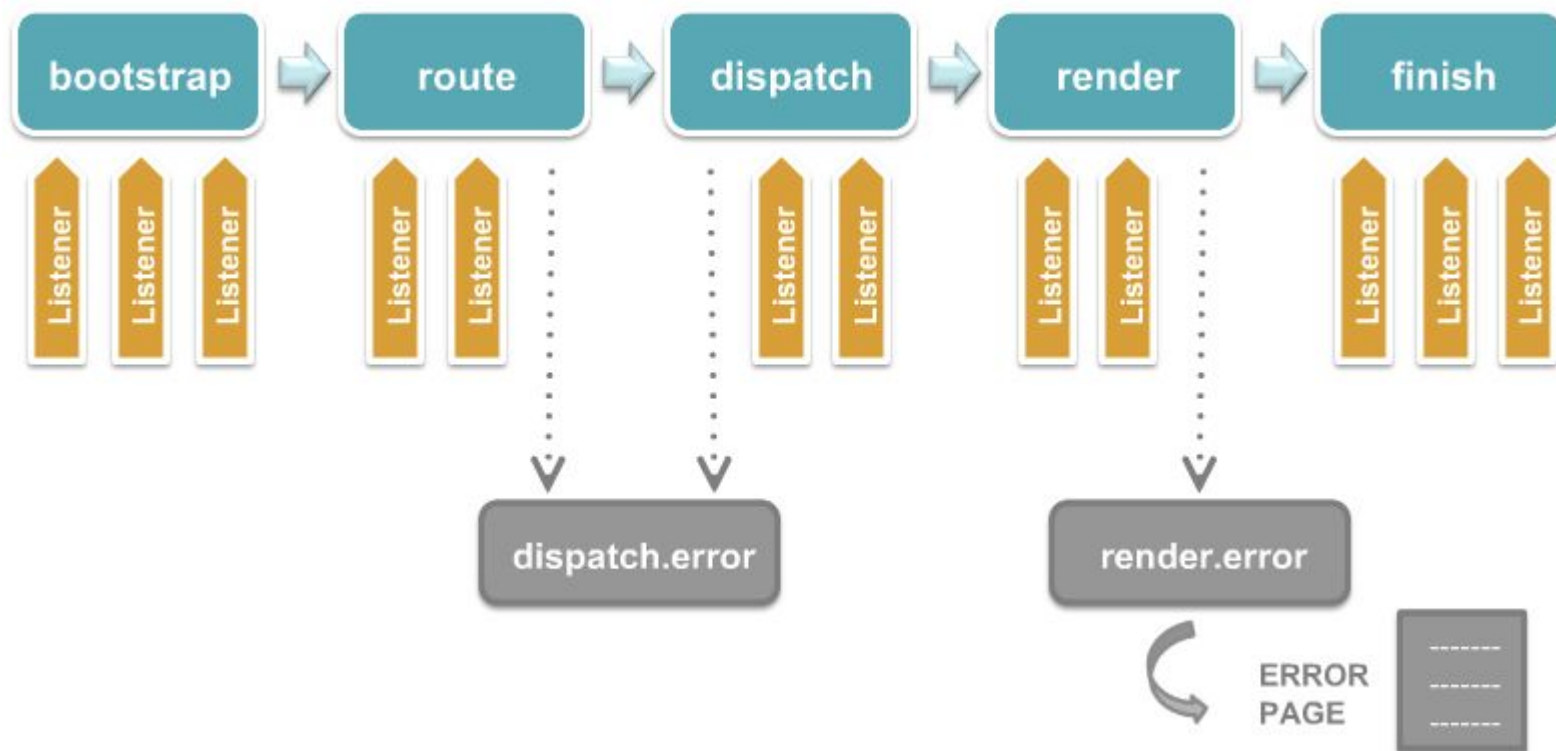
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A Few Words About ZF2

- Modular Architecture
 - 1 or more modules make an application
- Event Driven Architecture
 - Helps you minimize coupling.
- Service Oriented Architecture
 - Important pieces of functionality that a module provides can be “exported” and used in the whole application.
- Model-View-Controller (MVC)
 - Separation of concerns

A Few Words About ZF2 (2)

- Event Driven Architecture



A Few Words About ZF2 (3)

- Very Flexible And Powerful
- Can be “Heavy”
 - A lot of files to be loaded
 - A lot of operations to be executed initially

How to Improve The Performance?

... major things that we need to achieve

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How to Improve The Performance

- Decrease the number of files to interpret (load from the file system and compile)
- Increase the number of requests per second
- Decrease the time for a single request
- Performance should not deteriorate with more
 - ZF2 modules
 - database requests
 - concurrent visitors

How to Improve ... (2)

- Tools to Measure Performance:
 - Z-Ray
 - Zend Profiler
 - Apache Benchmark / JMeter / FunkLoad



How to Improve ... (3)

- Initial state:
 - For URL: <http://learnzf2.local/application/index/index>
 - 60 request, 5 concurrent

| | Requests Per Second | Time To Load | Files To Load |
|---------|---------------------|--------------|---------------|
| Initial | 21.80 | 118 ms | 351 |



General Recommendations

... can be applied to any ZF2 application

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General Recommendations

- Remove/Disable Debug Code

| Tip | Requests Per Second | Time To Load | Files To Load |
|--------------------|---------------------|--------------|---------------|
| Initial | 21.80 | 118 ms | 351 |
| Disable Debug Code | 24.30 | 108 ms | 341 |

General Recommendations (2)

- Always Use OpCache
 - Faster start-up time
 - Faster run-time

| Tip | Requests Per Second | Time To Load | Files To Load |
|--------------------|---------------------|--------------|---------------|
| Initial | 21.80 | 118 ms | 351 |
| Disable Debug Code | 24.30 | 108 ms | 341 |
| OpCache | 112.45 | 43 ms | - |

General Recommendations (3)

- Decrease the Number of Files to Load
 - EdpSuperluminal (packs ZF2 library files into one file)
 - composer require evandotpro/edp-superluminal
 - Cache Config Files - no closures in them!

| Tip | Requests Per Second | Time To Load | Files To Load |
|--------------------------------|---------------------|--------------|---------------|
| OpCache | 112.45 | 43 ms | 341 |
| Less files: EdpSuperluminal | 143.06 | 31 ms | 42 |
| Less files: Config Cache | 152.34 | 29 ms | 35 |

General Recommendations (4)

- Decrease File System Lookups
 - Use ClassMap Autoloader
 - Use Template Maps

| Tip | Requests Per Second | Time To Load | Files To Load |
|------------------------------------|---------------------|--------------|--------------------------------|
| Less files: Config Cache | 152.34 | 29 ms | 35 |
| Lookups: ClassMap Autoloader | 152.50 | 27 ms | 35 + N N- number of modules |
| Lookups: Template Map | - | - | 35 + 2N |

General Recommendations (5)

- 7 - 8 times improvement
- 9-10 times less files to load
- With little or no effort

| Tip | Requests Per Second | Time To Load | Files To Load |
|--------------------------------------|---------------------|--------------|---------------|
| Initial | 21.80 | 118 ms | 351 |
| Faster file lookups: Template Map | 152.50 | 27 ms | 35 + 2N |

Specific Recommendations

... for real-world scenarios

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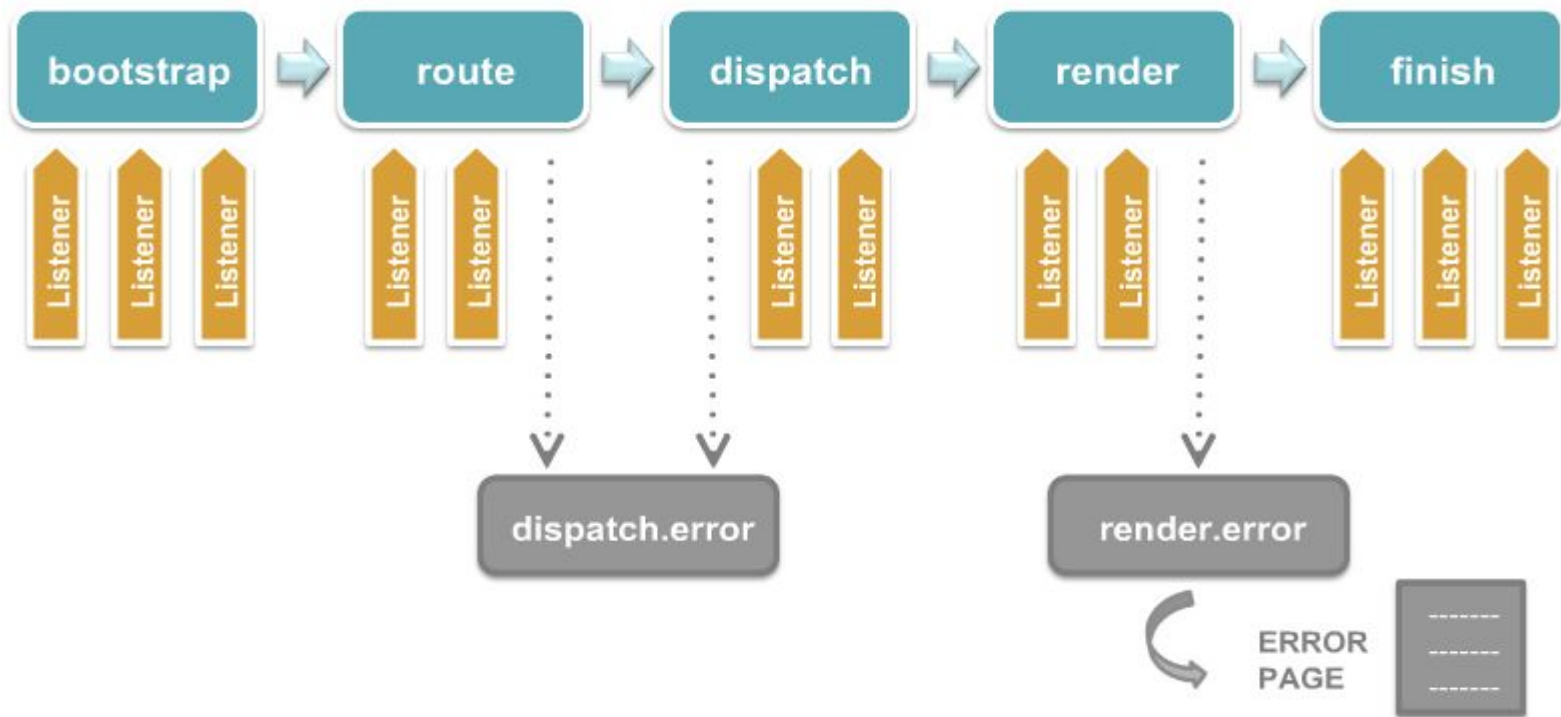
Specific Recommendations

- Database interaction is involved
- Routing is a bit complex
- Results can be cached
- Initial state
 - For URL: <http://learnzf2.local/exam/test/list>
 - 60 requests, 5 concurrent

| Tip | Requests Per Second | Time To Load | Files To Load |
|---------|---------------------|--------------|---------------|
| Initial | 122.14 | 33 ms | 35 + 2N |

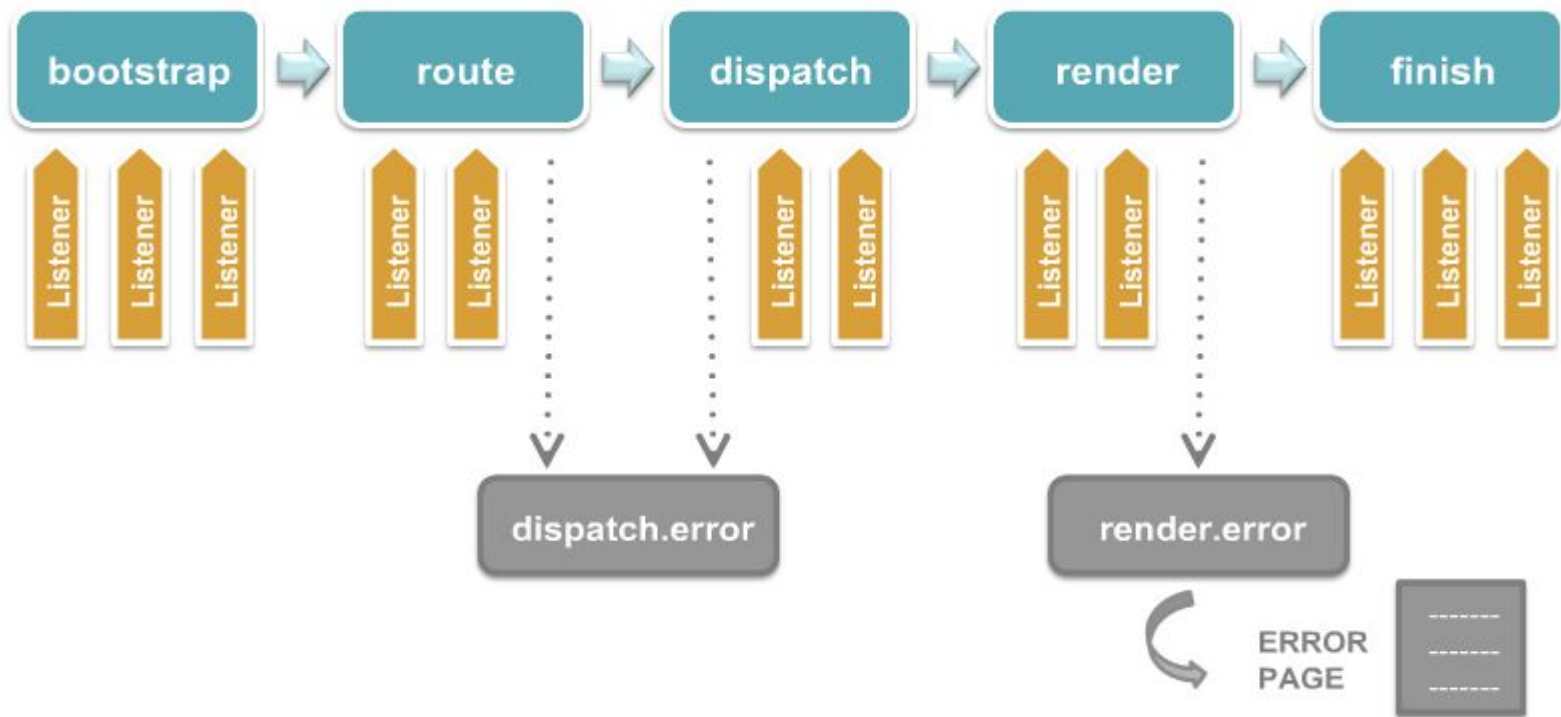
Specific Recommendations (2)

- Decrease the operations:
 - Skip some events
 - Cache results for some events



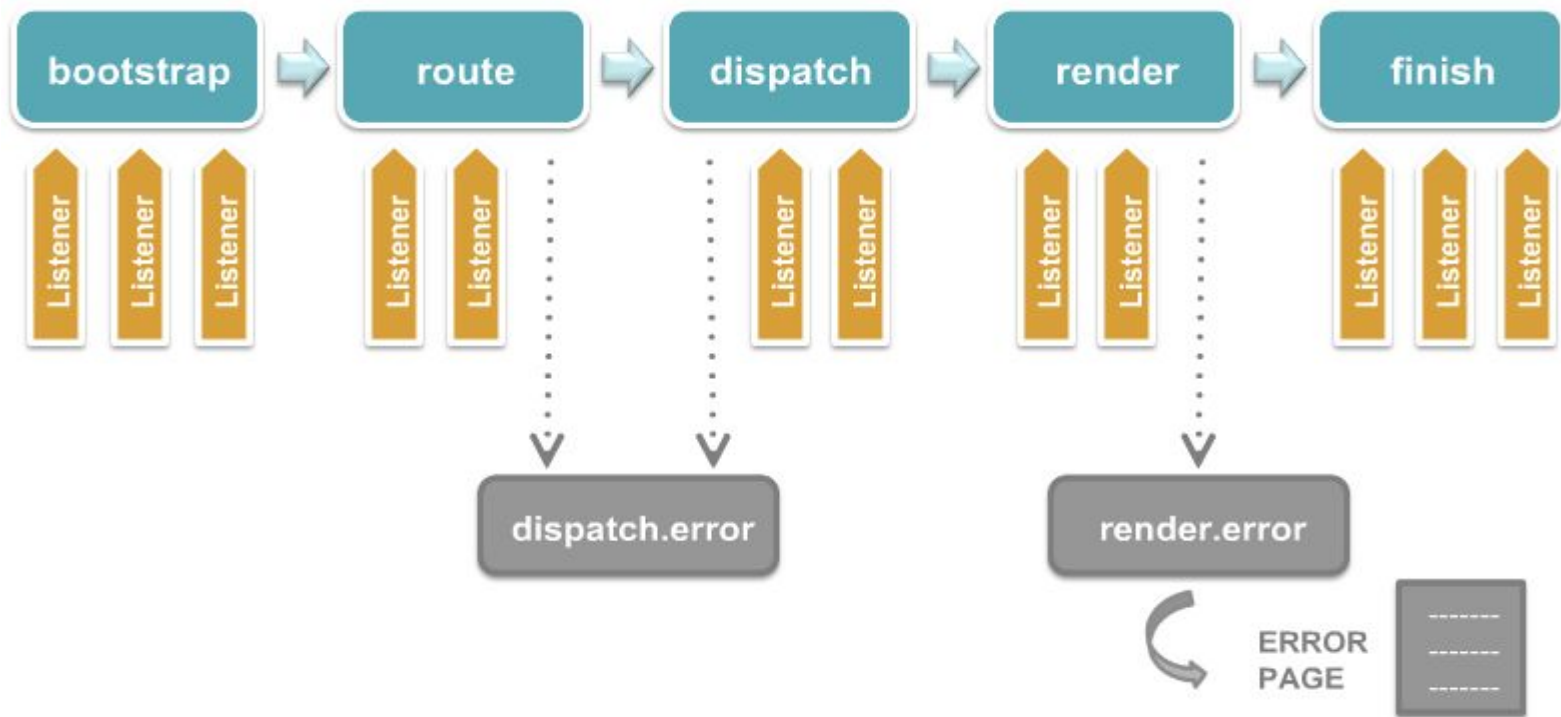
Specific Recommendations (3)

- **Page Cache** - caches complete HTML output
 - Load - After ROUTE
 - Save - After RENDER



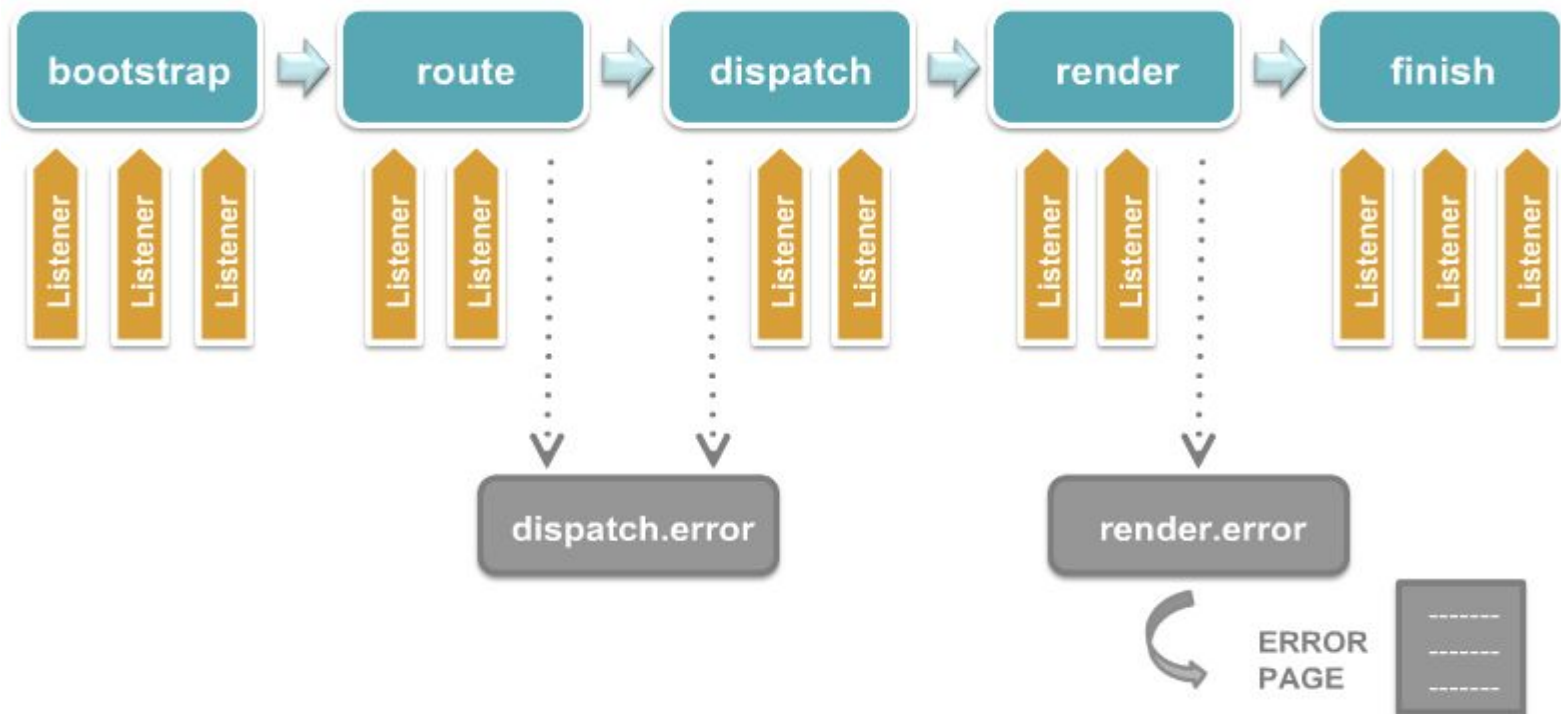
Specific Recommendations (4)

- **Action Cache** - caches only action HTML (no layout, etc)
 - Load - Before DISPATCH
 - Save - Right After RENDER



Specific Recommendations (5)

- **Route Cache** - saves only route match data
 - Load - Before ROUTE
 - Save - Right After ROUTE



Specific Recommendations (6)

- Page Cache
- Action Cache
- Route Cache
 - composer require learnzf2/route-cache

| Tip | Requests Per Second | Time To Load | Files To Load |
|--------------|---------------------|--------------|---------------|
| Initial | 122.14 | 33 ms | 35 + 2N |
| Page Cache | 175.30 | 23 ms | - |
| Action Cache | 143.12 | 31 ms | - |
| Route Cache | 145.12 | 29 ms | - |

Specific Recommendations (7)

- Choose the right cache
 - if text data - no serialization
 - if variables - use serialization
 - if data is static - use local cache
 - if data is dynamic - use remote cache

Show Me The Code!

... live demo for all ZF2 fans

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What's Next?

... the future is bright!

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What's Next?

- **PHP 7**

- <http://php7.zend.com/>
- Make sure to enable OpCache!

| Tip | Requests Per Second | Time To Load | Files To Load |
|--------------------------------------|---------------------|--------------|---------------|
| Initial | 21.80 | 118 ms | 351 |
| Faster file lookups: Template Map | 152.50 | 27 ms | 35 + 2N |
| PHP 7 | 282.48 | 18 ms | - |

What's Next? (2)

- **ZF2++**
 - **Faster Event Manager**
 - **Faster Service Manager**

Thank you very much!

Questions anyone?

Ask now or write your feedback at slavey@zend.com.

- <https://joind.in/15603>
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References:

- 1.Z-Ray: <http://zend.com>
 - 2.Learn ZF2: <http://learnzf2.com>
 - 3.EdpSuperluminal
<https://github.com/EvanDotPro/EdpSuperluminal>
 - 4.Packagist: ...
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