twitter: @akrabat

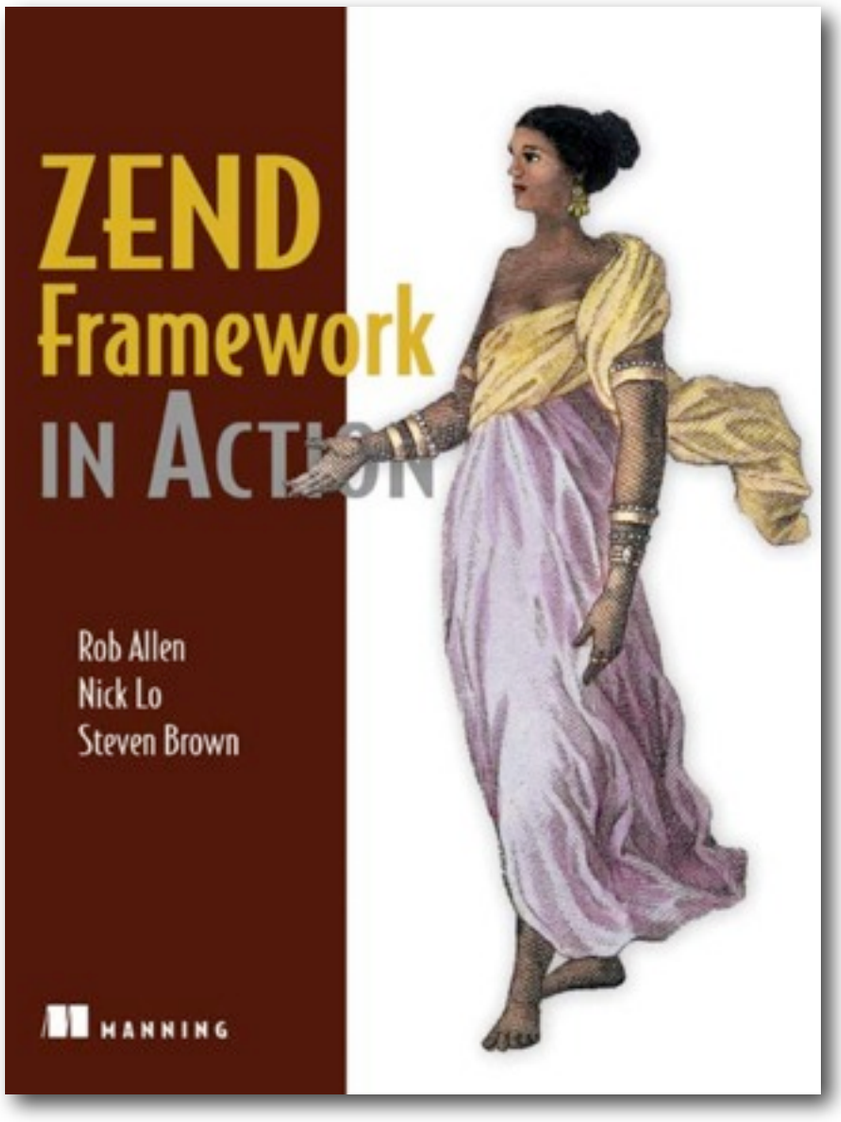
Stress-free Deployment

Rob Allen

ConFoo March 2011

Rob Allen?

- PHP developer since 1999
- Wrote Zend_Config
- Tutorial at akrabat.com
- Zend Framework in Action!



Next book!

Zend Framework 2 in Action

(with Ryan Mauger)

Why automate deployment?

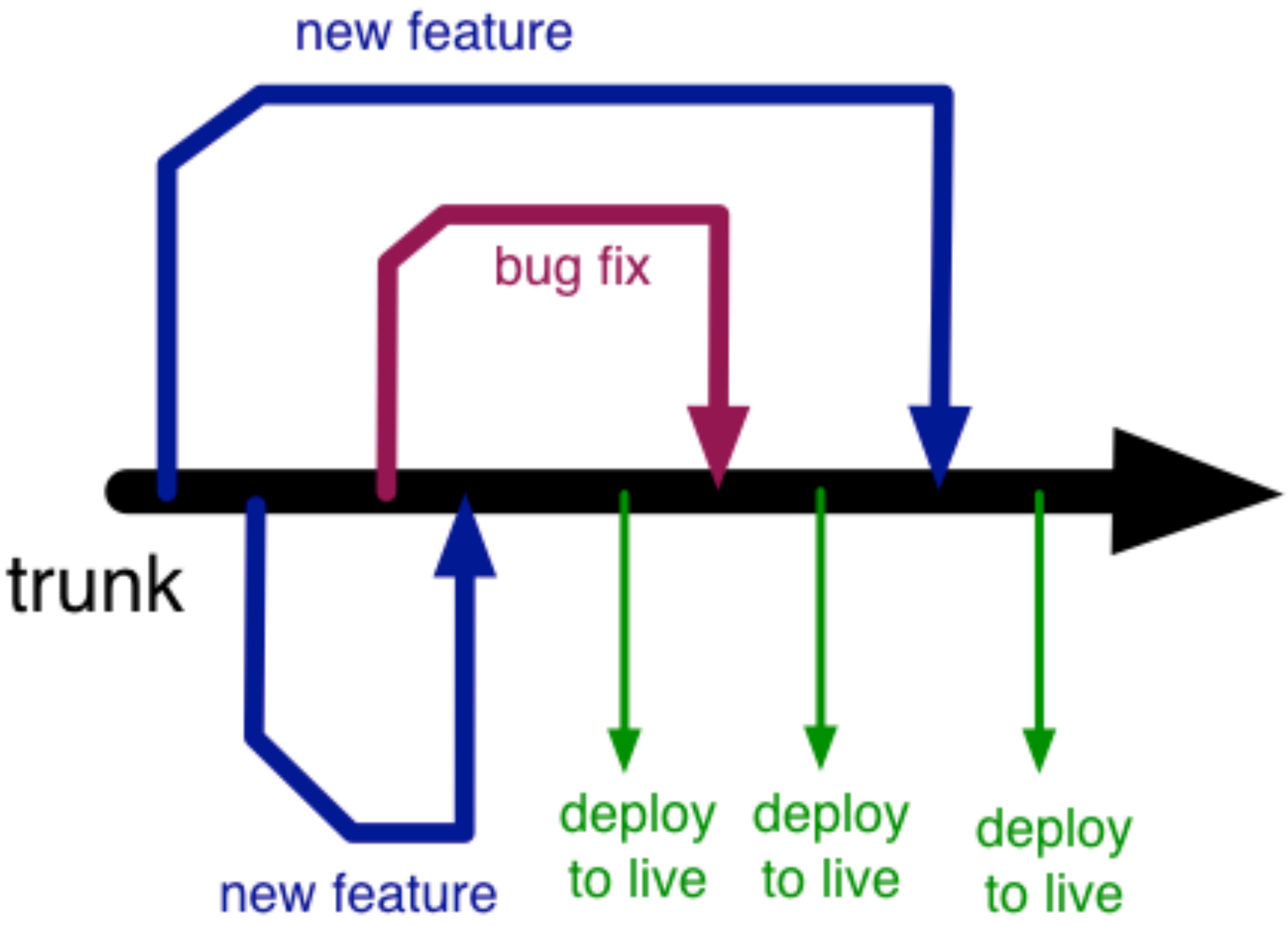
Getting your house in order

Source code control

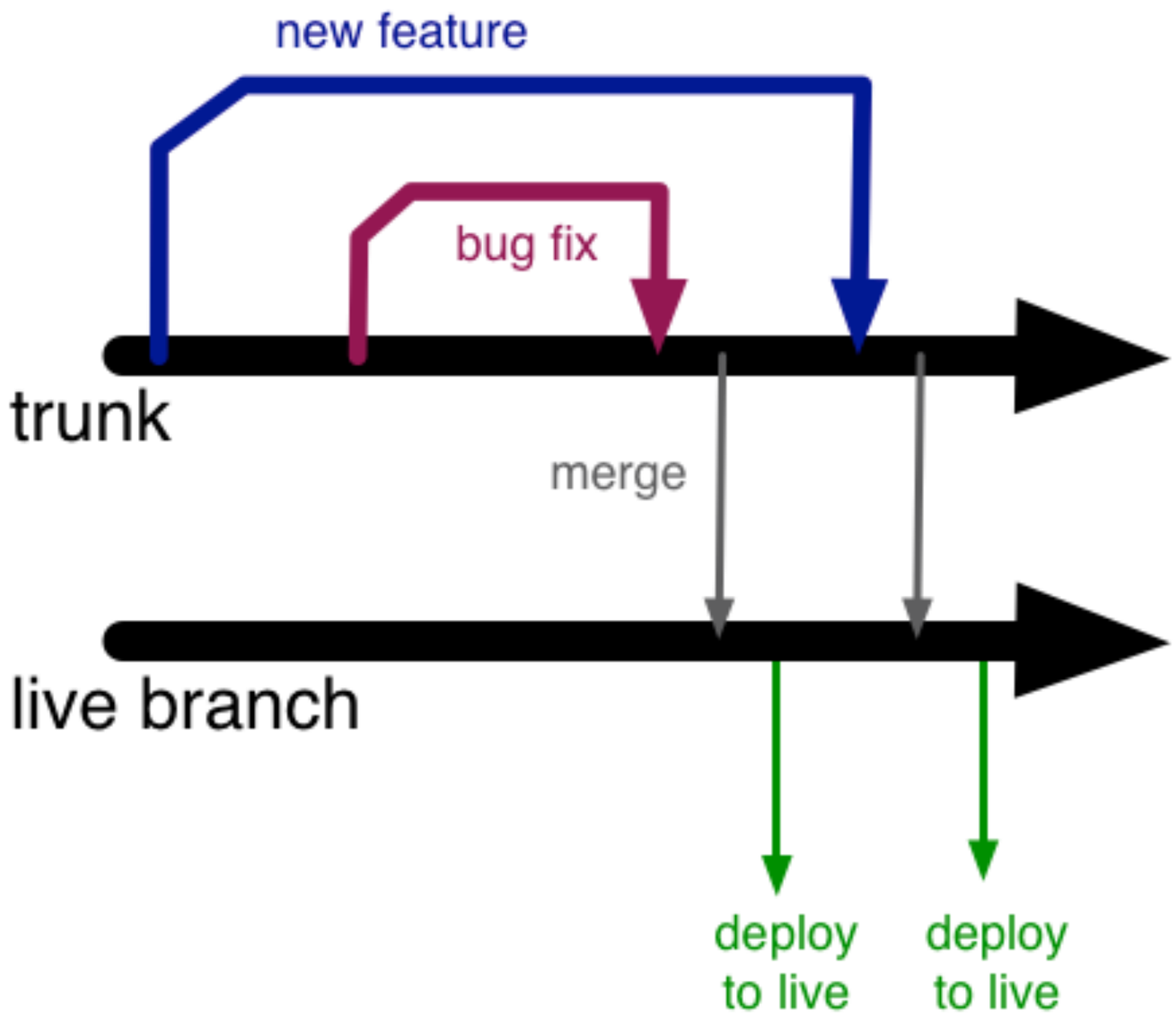
Branch!

- Branch every new feature
  - (that includes bug fixes)
- Be ready go live at all times
  - Trunk deployment
  - Live branch deployment

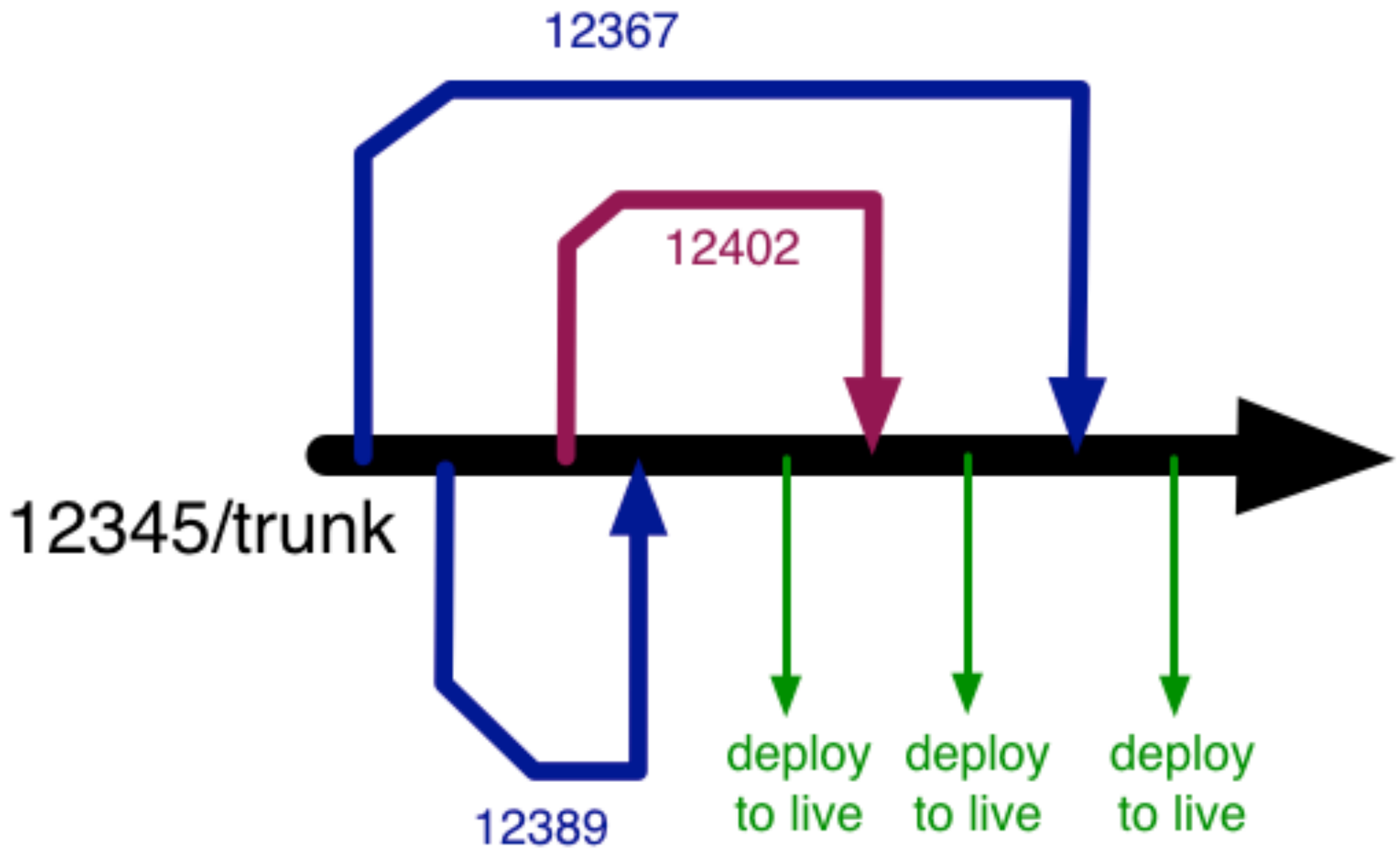
Trunk deployment



Live branch deployment



This is what I do



Database considerations

One master database

- Live database holds master structure
- Copy master to everywhere else
- Advantages:
  - Simple to implement
- Disadvantages:
  - Backwards compatibility required
  - Doesn’t scale for multiple devs well
  - Easy to make mistakes

Migrations

- Versioned schemas
- Use *delta* files with UP and DOWN functions
- Advantages:
  - version controlled
  - destructive changes possible (but don’t do it!)
- Disadvantages:
  - Can’t think of any!

Migrations tools

- DbDeploy
- LiquiBase
- Framework specific
  - Doctrine
  - Akrabat_Db_Schema_Manager
  - Cake migrations
  - PEAR: MDB2_Schema
- Home-brew script

For more info

“Database version control without the pain”
by Harrie Verveer

http://slidesha.re/gwq0aw

Also read http://www.harrieververveer.com/?p=247

Code considerations

Context awareness

- Configuration based on where the code has been deployed
- Automatic
  - Automatic detection based on URL?
  - Environment variable set in `vhost` defintion?
- Local configuration file

So what's deployment all about?

Things to think about

- Transport to server
  - FTP? rsync? svn checkout? svn export?
- File permissions
- Preserve user uploaded files
- Steps after upload
  - Stale cache?
  - Cache priming?

Server organisation

- Much easier if you control `vhosts`
- For multiple sites on same server:
  - Use predictable file locations for all sites
    - e.g:
      - /home/www/{site name}/live/current
      - /home/www/{site name}/staging/current
- Multiple servers for one site:
  - Keep them the same!

The deployment plan

Typical steps

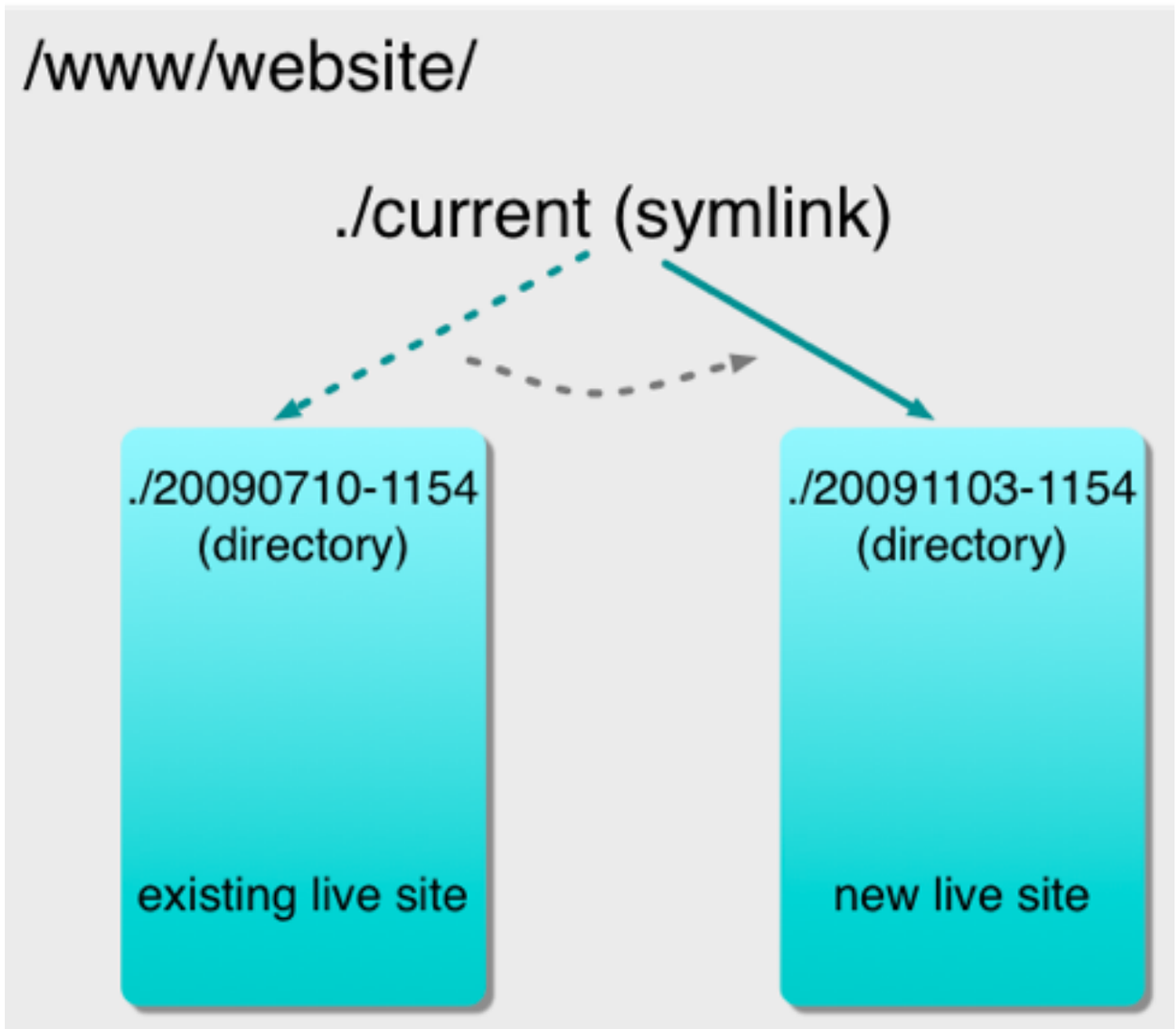
- Tag this release
- Set “under maintenance” page
- Transfer files to server
- Set file permissions as required
- Delete old cache files
- Run database migrations if required
- Remove “under maintenance” page

Here's mine:

1. Branch `trunk` to `release-{yymmdd-hhmm}`
2. ssh into server
3. Ensure staging is up to date (`svn st -u`)
   If not, stop here!
4. `svn checkout` new release branch to a *new folder* in live directory
5. Set permissions on the /tmp folder for cache files

Finally

- Switch “current” symlink to new directory



Tools for automation

Simple scripts

- PHP, Bash or Bat files
- Simple to write and run
- Execute command line apps via exec()

Example PHP script

```
$cmd = "svn cp -m \"Tag for automatic deployment\"
    $baseUrl/$website/trunk $baseUrl/$website/tags/$date";

ob_start();
system($cmd, $returnValue);
$output = ob_get_clean();

if (0 < $returnValue) {
    throw new Exception("Tagging failed.\n" . $output);
}
echo "Tagged to $date\n";
```

Phing

- PHP based build system based on Ant
- XML configuration files
- PEAR installation
- Integration with Subversion and DbDeploy
- Expects to run `build.xml` in current directory
- `build.properties` contains config info

Phing philosophy

- Like *make*, build scripts consist of targets
- Targets can depend on other targets
  - “live” depends on “tag”, “checkout”, “migrate”
- Each target does the minimum it can

  e.g.
  - Create svn tag
  - checkout files to destination
  - migrate database

Example build.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<project name="BRIBuild" default="deploy" basedir=".">
  <tstamp>
    <format property="date" pattern="%Y%m%d-%H%M" />
  </tstamp>
  <property file="build.properties" />
  <property name="trunkpath" value="${svnpath}/${website}/trunk" />
  <property name="tagpath"
        value="${svnpath}/${website}/tags/${date}" />

  <target name="deploy" depends="tag" />
  <target name="tag" description="Tag trunk">
    <exec command="svn cp -m 'Tag for automatic deployment'
        ${trunkpath} ${tagpath}" />
    <echo msg="Tagged trunk to ${date}" />
  </target>
</project>
```

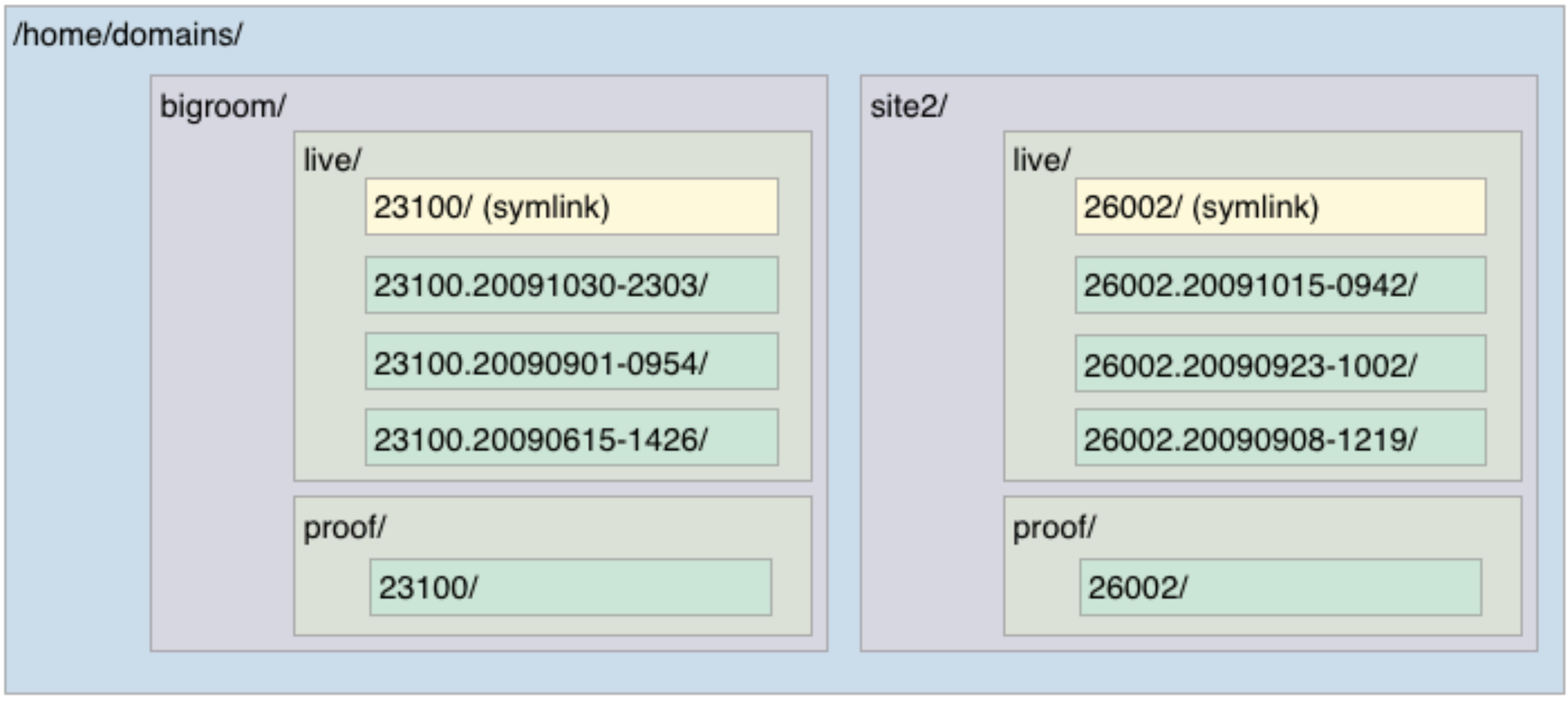
My deployment system

deploy.php

```
~$ deploy.php 23100
BRI server side deploy script
Version 1.1, 2009

Found /home/domains/bigroom/live/
Tagging to 20091030-2303... done
Deploying 20091030-2303 ... done
Changing symlink to new checkout
Cleaning up older checkouts
23100 successfully deployed to /home/domains/bigroom/live/
```

Our server layout



deploy.php

- Custom PHP script
- Relies on environment variable: WWW_DIR
- Advantages:
  - Custom designed to fit our way of working
  - PHP! Quick and easy to write.
- Disadvantages:
  - Hard to alter for a specific server
  - Hard to change methodology

FTP using Phing (1)

```
<project name="project" basedir="." default="deploy">
  <property file="build.properties" />
  <property name="trunkpath"
      value="${svnpath}/${website}/trunk" />
  <fileset dir="${exportdir}/" id="files">
    <include name="**/*" />
  </fileset>

<target name="deploy" depends="svnexport,ftp-upload" />

<target name="svnexport">
  <delete dir="${exportdir}" />
   <svnexport
      username="${username}" password="${password}"
      nocache="true" force="true"
      repositoryurl="${trunkpath}" todir="${exportdir}" />
</target>
```

FTP using Phing (2)

```
<target name="ftp-upload">
  <echo msg="Deploying application files" />
  <ftpdeploy
    host="${ftp.host}" port="${ftp.port}"
    username="${ftp.username}" password="${ftp.password}"
    dir="${ftp.dir}">
      <fileset refid="${files}" />
    </ftpdeploy>
  </target>

</project>
```

FTP with Phing

- Per-website build.xml for custom deployments
- Advantages:
  - Leverages other people's experiences
  - Was very fast to create
  - Works where ssh not available!
- Disadvantages:
  - New technology to be learnt
  - Phing beta and Pear_Version_SVN alpha

Rollback

Emergency roll-back

Just change the symlink!

Complete roll-back

- Write `rollback.php` or create a Phing build task
- Put the server back to where it was before
  - Change the symlink
  - Delete the deployed directory
- Database rollback
  - Run `down()` delta in your migration tool

To summarise

1. Automated deployment prevents mistakes
2. It’s not hard
3. Easy roll-back is priceless

Questions?

feedback: http://joind.in/2842
email: rob@akrabat.com
twitter: @akrabat

Thank you

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