

Staging Drupal

Managing Your Project in Multiple Environments



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Introduction

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Why are we here

- Discuss the challenges with developing a site in multiple environments
- Offer some solutions
- Goals of our process and tools used across multiple environments
 - Allow for seamless code integration (syncing)
 - Increase efficiency of distributing database changes
 - Minimize downtime and errors while updating the production site



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Why Stage Drupal?

- Websites are becoming increasingly complex.
- Transition to traditional software development cycle.
- Multiple engineers/designers working on the same project.
- Proper staging avoids conflicts, separates development from production.



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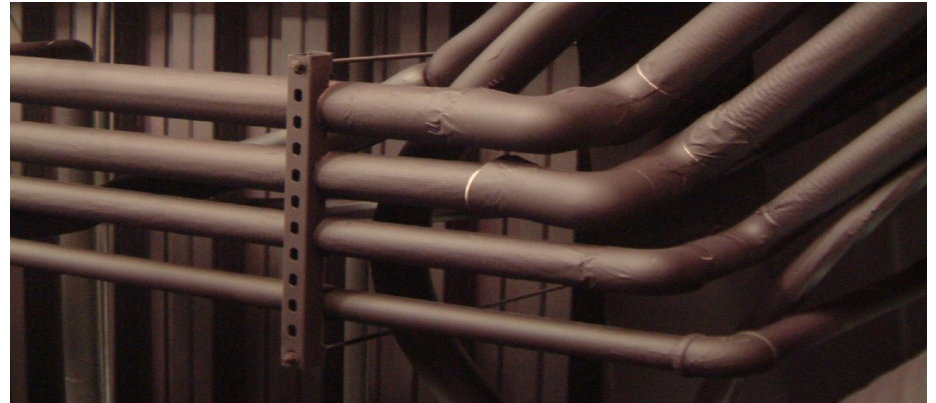
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Multiple Environments

- Proper staging requires development, QA, and production locations.
- Each developer has a separate copy of the application in an isolated location.
- Flow is like a pipeline, development → QA → production.
- Drupal is portable
- How to stage Drupal?



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Managing Code With Source Control

- Source control is essential in the staging process.
- Manages changes to the code over time.
- We recommend a standard “tags, branches, trunk” repository layout.
- We separate core code from project code.
- `rsync -avC -delete -exclude=dir src/ dst`



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What Files Should Be Under Source Control?

- Separate code from user generated content.
- Create “templates” for environment specific files.
- Store database snapshots?
- Update code frequently to prevent conflicts.
- Check production for modifications.



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Porting the Database

- Database snapshot and files tied together
- Mysqldump, pg_dump, *MyAdmin applications, contributed solutions.
- Restore database, clear cache.
- Multisite considerations.



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Code Release Cycle

- Developers import snapshot, commit changes.
- Changes promoted to QA, tested thoroughly.
- Admin steps, adding content tested on QA.
- Code is tagged.
- Code updated on production, manual changes made again.
- Alpha, beta, stable release cycles.



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Automate Administrative Tasks Through Code

- When
 - Multiple sandboxes needing the same database changes
 - Phased approach to release features
- Why
 - Easily share changes among sandboxes
 - Seamlessly add functionality to an active site
 - Version control



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A Systematic Approach

- Step 1
 - Take a database snapshot with Demonstration Site module (drupal.org/project/demo)
- Step 2
 - Write it down!
 - Separate out by sub-projects.
 - Be explicit and exact
 - For example, installing “Reroute Email”



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“Admin List” example

- ADMIN
 - [reroute email]
 - Enable Reroute Email module (admin/build/modules)
 - Configure Reroute Email (admin/settings/reroute_email)
 - dev@company.com



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A Systematic Approach

- Step 3 – Choice Time
 - How long is your admin list?
 - Would it be faster for you to write a script that all developers can run in their sandboxes and also can be used on production?
 - What is the best use of time here?
 - It really is a judgment call. The more you write database update scripts, the faster you become.



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A Systematic Approach

- Benefits of writing an update script
 - All changes can be accessed in version control and more easily debugged
 - Test your deployment process several times as part of QA
 - You write it once and use it in as many environments as you need



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The “Site Module”

- MYSITE.module.
- Site specific configurations: hook_form_alter() and hook_nodeapi().
- Use hook_update_N() in MYSITE.install to make database changes across many development environments.
- This “site module” is NOT intended to live outside of its site or be installed anywhere other than its site.



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The “Site Module”

- The correct way to work with an install file is that for every *update function*, you amend the *install function* so that newly installed modules behave correctly.
- That being said, my recommendations for a MYSITE.install file are to NOT be used for any other module you create – just the “site module”.



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MYSITE.install

- New update function to replicate our “Admin List”.
- Configurations saved in the {variable} table.

```
function mymodule_update_N() {  
    $ret = array();  
    module_rebuild_cache();  
    $mods = array('reroute_email');  
    drupal_install_modules($mods);  
    variable_set(REROUTE_EMAIL_ADDRESS,  
        'myemail@company.com');  
    return $ret;  
}
```



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Use Drupal Functions

- Examples vs direct sql query
 - `variable_set()`;
 - `node_submit()`; `node_save()`;
- Less error prone
 - Inserting or updating data
 - Several tables at once
 - Lock tables
 - Serialize data
 - Clear cache



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MYSITE.install Examples

- 5 development sandboxes, a testing server and production.
- 5 critical nodes that you need to add and that must be in every environment.
- That would be 35 instances of manually creating a node. How tedious! Especially when you can write it once for everyone.



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Start Building

- You have to do it manually in one sandbox first
- Install Node Export
 - drupal.org/project/node_export
- Install Content Copy
 - drupal.org/project/cck
- Create Content Types and Taxonomies.
- Link taxonomies to content types either via taxonomy interface or as a CCK field
- Create nodes



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Content Types

- Create a folder in your module called “content_types”
- Create a file in that folder called “my_type.cck”
- Export the type (admin/content/types/export)
- Put the contents of this export into your new file.
 - You don't need <?php



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Content Types

```
$modulepath = drupal_get_path ('module',  
  'drupalconparis2009');  
$cck_definition_file =  
  $modulepath."/content_types/my_type.cck";  
$form_state['values']['type_name'] = '<create>';  
$form_state['values']['macro'] =  
  file_get_contents($cck_definition_file);  
include_once(drupal_get_path('module',  
  'node') . '/content_types.inc');  
include_once(drupal_get_path('module',  
  'content_copy')  
  . '/content_copy.module');  
drupal_execute("content_copy_import_form",  
  $form_state);  
content_clear_type_cache();
```



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Vocabulary

```
$voc = array();  
$voc['name'] = 'shuswi';  
$voc['description'] = '';  
$voc['nodes'] = array('page'=>'page',  
    'story'=>'story');  
$voc['multiple'] = 1;  
$voc['required'] = 0;  
$voc['relations'] = 1;  
$voc['hierarchy'] = 1;  
$voc['weight'] = 0;  
taxonomy_save_vocabulary($voc);
```



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Terms

```
$vid = db_result(db_query("SELECT vid FROM
    {vocabulary} WHERE name = '%s'", 'shuswi'));
$shuswi[] = 'bipagi';
$shuswi[] = 'jiphobre';
$shuswi[] = 'slid';
foreach ($shuswi as $k=>$v) {
    $term = array();
    $term['vid'] = $vid;
    $term['name'] = $v;
    $term['description'] = "";
    $term['weight'] = 0;
    taxonomy_save_term($term);
}
```



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Exporting Nodes

- Create a folder in your module called “nodes”
- Create a file in it called nodes_20090904.inc
- Go to Administer Content (admin/content/node)
- Check the nodes you want to export
- Select “Export” from the bulk operation dropdown
 - This returns an array of your node content
- Paste this code in your file
 - You don't need <?php



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Importing Nodes

```
//content arrays
$modulepath = drupal_get_path ('module','drupalconparis2009');
$nodes_file = $modulepath. "/nodes/nodes_20090904.inc";
eval('$nodes = '.file_get_contents($nodes_file).';');
//save nodes
foreach ($nodes as $node_array) {
    unset($node_array['nid']);
    unset($node_array['vid']);
    unset($node_array['_export_node_encode_object']);
    unset($node_array['menu']);
    foreach($node_array['taxonomy'] as $term) {
        $term = (object)$term;
    }
    $node_object = node_submit($node_array);
    node_save($node_object);
}
```



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Export Views

- Version control because they are no longer in the database
- Facilitates multiple sandboxes being in sync
- Create a folder in your site module called 'views'
- Enable Views Export
- Export each view individually, create a file called myview_name.inc

```
<?php  
//your exported code here  
$views[$view->name] = $view;
```



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Views in Code – Site Module

```
function mymodule_views_api() {
  return array(
    'api' => 2,
    'path' => drupal_get_path('module', mymodule) .
      '/views/*.inc',
  );
}
function mymodule_views_default_views() {
  $path = './'. drupal_get_path('module', mymodule)
    '/views/*.inc';
  foreach (glob($path) as $views_filename) {
    require_once($views_filename);
  }
  return $views;
}
```



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Register Your New Views

- Clear views cache (admin/build/views/tools)
 - This one tells the site that you have views in code as well – now your previously placed views generated blocks won't get confused.
- “Revert” all the views that you just saved into code. This will remove them from the database.
- Clear views cache again
 - This one ensures that your site is only looking for the views in code.



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Permissions

- Permissions API
 - drupal.org/project/permissions_api
- After all modules have been installed so you know the names of all permissions and roles

```
$permissions = array(  
  'create mytype content',  
  'edit own mytype content',  
  'delete own mytype content',  
);  
permissions_grant_permissions('authenticated user',  
  $permissions);
```



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Testing Your Install Script

- Take another database snapshot
- Reload the fresh database copy you took before you started (without all those administrative changes)
- Run your update script – `mysite.com/update.php`
- In the dropdown of your site module, select the N of your script



The screenshot shows a portion of a Drupal update interface. At the top, there is a dropdown menu with the text "No updates available" and a downward arrow. Below this, the text "drupalconparis2009 module:" is followed by a dropdown menu containing the number "1" and a downward arrow. This dropdown menu is circled in red. Below that, the text "views module:" is followed by another dropdown menu with "No updates available" and a downward arrow.



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Testing Your Install Script

- If there are errors
 - Debug them and make changes
 - Reset your database (admin/build/demo/reset)
 - Run update.php again
- Make sure your configurations, taxonomies, content all look as expected.
- When your team syncs their code and runs update.php, they will now have a slew of database changes instantly!



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Recap

- Sometimes takes longer to write and test (and reload DB) than to just email a list of admin steps to your development team and repeat on production.
- Remember, to be officially correct, all updates should go also go in the install function. That way the module can stand on its own.
- CCK types must be in separate file



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Recap

- Must add bottom line to exported view in mymodule/views/myview.inc
 - `$views[$view->name] = $view;`
- Need two Views functions in your module
- Must unset the nid & vid on a node import because node_save looks for an those to determine if it is performing and update or insert
- If you get timeout errors, separate your updates into several functions



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Drupal Tools

- Devel: Generate: drupal.org/project/devel
- Demonstration Site: drupal.org/project/demo
- Node Export: drupal.org/project/node_export
- Permissions API:
drupal.org/project/permissions_api
- Views Export: drupal.org/project/views
- CCK: Content Copy: drupal.org/project/cck
- Drush: drupal.org/project/drush



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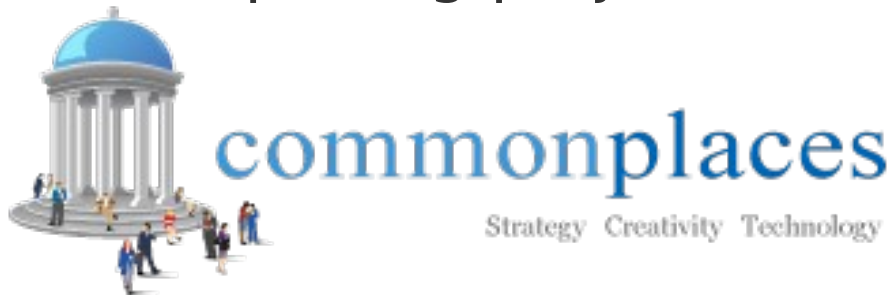
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More Options

- Blocks: Follow similar methodology as Content Types by using the form function
 - `block_add_block_form`
- drupal.org/project/variable_dump
- drupal.org/project/exportables
- drupal.org/project/transformations
- drupal.org/project/migrate
- drupal.org/project/deploy
- drupal.org/project/autopilot
- drupal.org/project/features



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