Antelope & PHP
(or getting your real time data on the web)

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Lofty goals

๏ “Quinlan-esque” interface
๏ Plug’n’play capability
๏ Simple application for the user
  ◦ no knowledge of HTML required
Interface

- PHP extensions: Datascope.so, Orb.so, sysinfo.so
- Make small changes to PHP init script
- All (kind of!) software in contrib
The Antelope PHP Interface

- Faithful map of C API (like Datascope Perl)
- Supporting scripting elements in $ANTELOPE/data/www, $ANTELOPE/data/php

Diagram:

- Databases
  - libds.so
  -Datascope.so

- Orbs
  - liborb.so
  - Orb.so

- Machines
  - libstock.so
  - Sysinfo.so

- PHP
- Apache
- Browser
Datascope.so

- standard database operations -- ds_dbopen, dbsubset, dbjoin etc.
  - note ‘ds_’ prefix on dbopen and dbclose
- waveforms
- error handling
- parameter files
- special functions--path handling etc
- time conversion
- foreign keys mappings
Orb.so

- orbopen / close / ping
- orbselect / reject
- pforbstat
- (orbreap / unstuffPkt...coming )
sysinfo.so

- my_ip, hostname, hardware, os, username...
- process info--PIDs etc
- Memory use, load averages etc
Setting up for Antelope

PHP: compilation

- Install PHP to work with your web server
- Get `$ANTELOPE/src/contrib/data/php`
  - Antelope contributed-code repository
  - BRTT FAQ explains checkout
- `setenv PHP_INC ......
  - not necessary for `/usr/local/include/php` or `/usr/include/php`
- `make install`
PHP must ‘see’ the extension

- Datascope.so, Orb.so & sysinfo.so extensions must be ‘visible’ to PHP
- **Extensions caveat!** Only one directory definition allowed, therefore...
- Two options for extensions:
  - **Single extension:** Modify php.ini extensions dir to Antelope:
    
    ```
    ; Directory in which the loadable extensions (modules) reside.
    extension_dir = “/opt/antelope/4.8/data/php”
    ```
  - **Multiple extensions:** Sym-link to real home of Datascope.so

/usr/lib/php/extensions

Datascope.so  -> /opt/antelope/4.8/data/php/Datascope.so
Orb.so  -> /opt/antelope/4.8/data/php/Orb.so
include_dir

- May need to set include_dir directive in php.ini
  - $ANTELOPE/data/www/css/
  - images/
  - js/
  - xslt/
How does it work?

- Dynamic load of Datascope and/or Orb shared object libraries:

```php
<?php
if (!extension_loaded(‘Datascope’) ) {
    dl(‘Datascope.so’) or die(‘Failed’) ;
}
?>
```
It works, so now what?

- man pages: datascope_php, orb_php, sysinfo_php

```php
$mydb = ds_dbopen("/path/to/database","r")

$active_stas = dbprocess($mydb,"dbopen site",
    "dbjoin snetsta","dbjoin deployment",
    "dbsubset offdate == NULL",
    "dbsubset time <= time()",
    "dbsort snet sta")
```
Anatomy of a web application

PF  Config and settings
CSS  Appearance
JS   Client side function
PHP  Database & processing
Config and settings

```plaintext
server_settings &Arr{
    use_dbcentral 0
    img_dbpath /export/www/html/db/rt_images_roadnet
    movies_database_present yes
}

rtapps_subdir /rtapps

header_settings &Arr{
    project_title Realtime Imagebank
    css_file &rtapps_subdir/css/rtimbank_css.php
    refresh_rate_sec 300
    records_per_page 20
}

image_settings &Arr{
    page_bkgrd &rtapps_subdir/images/roadnet_page_bkgrd.gif
    header &rtapps_subdir/images/roadnet_logo.jpg
    header_bkgrd &rtapps_subdir/images/roadnet_logo_bkgrd.gif
    header_alt ROADNet Header Logo
    footer_bkgrd &rtapps_subdir/images/roadnet_bottom_line.gif
    footer_color 0F1C23
}
```
Separate content from layout

Allows users to modify page design without editing any of the underlying PHP code
Client side function

- Allows content to be changed without new requests to Apache/PHP
- Large range in the application of this...
Database & processing

- “Meat” of the application
- All connection, manipulation and transformation processes
Real world examples

- **Datascope.so** Connect to demo dbmaster and output tables...
- **Orb.so** Connect and display orb stats...
But I don’t know PHP!

- \$ANTELOPE/data/php/www

- Pre-built applications; each has style sheet file, php file (that calls the application), and if needed a javascript file

- Copy to your Apache web dir, fill out parameter file, done...

- OR.....
Can’t that be automated?

- dbwebproject
- Uses templates in parameter-file
  - e.g. ‘rtimbank’, ‘stations’, ‘LCI_website’
- Takes PHP, Javascript, PF, etc. parts from $ANTELOPE/data
- Installs everything in /path/to/htdocs
Antelope and PHP5

- Works....
- .....possible clash with libxml2
- Symptom: SIGSEGV in ds_dbopen
- Cause: offending symbol ‘attribute’ in libxml2
- Workaround: compile libxml2 without deprecated SAX1 interface
  - ./configure --without-legacy
- Warning: Unknown downstream consequences!! (use private libxml2 if worried)
- Solution: Antelope 4.9...
Antelope and PHP5

- **Payoff:** Object-oriented programming
- **Necessary for full orb interface (coming)**
Comments/questions?

- Post Dan Q’s talk...
  - PHP’s PCRE closely resemble Perls regex
  - http://www.php.net/pcre
- Give it a try.....?