



**Open Source
Ad
Serving and
Inventory
System**

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Installation

Requirements

OASIS runs under Linux and FreeBSD. It is known to work with RedHat 6.2 through 8.0.

OASIS requires a number of packages; if you use RedHat Linux, you can install everything from RPMs, and you won't have to compile anything.

- PHP 4.1.0 and up (with mysql, shared memory, semaphore support). PHP needs to be compiled both as a server module and as a standalone executable (the maintenance scripts require a standalone executable)

Build as standalone:

```
./configure --with-mysql --enable-sysvsem --enable-sysvshm
make
make install
```

Build into apache:

```
cd apache_1.3.27
configure
cd ../php-4.2.3
./configure --with-mysql --enable-sysvsem --enable-sysvshm --with-apache=../apache_1.3.27
make
make install
cd ../apache_1.3.27
./configure --activate-module=src/modules/php4/libphp4.a
make
make install
```

- MySQL 3.23 (<http://www.mysql.com/>) – version 3.23 is required for its MyISAM and HEAP tables
- ImageMagick (<http://www.simplesystems.org/ImageMagick/>) with support for JPEG and PNG (version 5.1.x and up)
- htmldoc (<http://www.easysw.com/htmldoc/>) version 1.8.8 and up
- curl (<http://curl.haxx.se/>) version 7.4.1 and up

Setup

PHP Configuration

First, make a symbolic link at `/usr/local/bin/php` to your standalone PHP interpreter. The OASIS installation and maintenance scripts depend on this location for the `php` binary.

Make sure that you have a `php.ini` file and that it contains the following directives:

```
register_globals = On
register_argc_argv = On
track_errors = On
```

The first two are mandatory. The second is optional; if you don't have it set, you won't get very helpful error

messages.

Special note about `register_globals`: some administrators are uncomfortable with having `register_globals` on. You can use `register_globals` and not compromise your entire site by just enabling it for your OASIS directory. The following lines of `httpd.conf` can serve as an example:

```
<Directory /var/www/html/oasis>
php_flag register_globals on
</Directory>
```

OASIS Configuration/Installation

Once you have PHP and all the other software above installed, untar the OASIS distribution in a temporary location.

Edit the file `oasis.cfg` to set up some initial variables. This file is well-commented, so you should be able to figure out from the comments how to configure it.

Alternately, you may use `contrib/makeconfig.php` to generate your config file. This steps you through the questions one by one and builds `oasis.cfg`. Run `install.php` as root. When prompted for a MySQL username and password, give a name and password of a user privileged enough to add a new user to the MySQL privileges tables, create the OASIS database, and reload the `mysqld`. If you notice any errors in the last couple steps (where `mysqladmin` is called to reload, and `hourly_maint.php` is called with `su`), you'll have to manually run those commands. MySQL *must* be reloaded in order to allow the OASIS scripts to connect to the database. `hourly_maint.php` must be run to load up shared memory for OASIS.

If you see warnings about shared memory or database connections, then you are going to have to run `hourly_maint.php` by hand. If you have to run `hourly_maint.php` by hand, run it like this:

```
hourly_maint.php start
```

and *be sure* to run it as the Web user!

Apache Configuration

Configure your Web server for PHP and include the `oasis_httpd.conf` file that was created during the installation process (and if you're dedicating this server to OASIS, you might want to set up your `DocumentRoot` to point to the OASIS directory for shorter URLs). Here's how I do it for Apache (these lines go in `/usr/local/apache/conf/httpd.conf`):

```
Include conf/oasis_httpd.conf

DocumentRoot "/path/to/oasis"
AddType application/x-httpd-php .php
php_admin_flag track_errors on

<Directory "/path/to/oasis">
    Options None
    AllowOverride None
    Order allow,deny
    Allow from all
</Directory>

<IfModule mod_dir.c>
    DirectoryIndex index.html index.php
</IfModule>
```


Installation

```
<Files *.inc>
    Order deny,allow
    Deny from all
</Files>

<Files *_maint.php>
    Order deny,allow
    Deny from all
</Files>

<Files check_inventory.php>
    Order deny,allow
    Deny from all
</Files>
```

Note that the path to `oasis_httpd.conf` is relative to the Apache `ServerRoot`.

It's important to deny access to your `.inc` files; they contain very sensitive information, and without a configuration entry specifically denying access to those files, intruders could pull up those files and use the information to compromise your system.

It's also critical to deny access to your maintenance scripts.

Restart Apache.

OASIS Tests

Now you should be able to go into your OASIS interface, which is found at `"http://[oasis_host][oasis_url]mgmt/"` (for example, if `oasis_host` = `oasis.yourdomain.com` and `oasis_url` = `/oasis/`, you'll go to `http://oasis.yourdomain.com/oasis/mgmt/` to open the management interface). Log in with the username and password you specified in `oasis.cfg`.

Create a top-level section for your ad server (for example, just call it "Main").

Create an advertiser and a campaign (probably easiest to use the Campaign Insertion interface under "New Campaign"). Go into the Campaign interface to make sure the campaign is set to "Active". Also, make sure that it is assigned to the top-level section you created, and make sure that its dates cover the current day.

On the Admin page, reload the delivery engine.

Now go to the Section interface, get the sample URL for your top-level section (just click on the section's name), and then open the URL for the IMG SRC. You should see your first banner served up.

If you don't see a banner, make sure that you see something assigned to the section under Hourly Assignments (under Delivery Engine Internals on the Admin page). Also make sure that the width and height specified in the URL match those for the ad(s) you put into your first campaign. If you don't see any assignments for Section 1, then most likely your campaign is not Active, it wasn't assigned to Section 1, or its dates do not cover the current day.

System Configuration

Once you're getting banners, you need to set up cron jobs (`hourly_maint.php` and `minutely_maint.php`) in the crontab of the user as which your Web server runs:

Installation

```
0 * * * * /path/to/php /path/to/oasis/mgmt/hourly_maint.php > /dev/null
5,10,15,20,25,30,35,40,45,50,55 * * * * /path/to/php /path/to/oasis/mgmt/minutely_maint.php > /dev/null
```

If you aren't already rotating the logs of your Web server, make sure that you set up some sort of log rotation. Here's how I rotate Apache logs with logrotate (these lines go in `/etc/logrotate.conf`):

```
/usr/local/apache/logs/error_log {
    daily
    nocreate
    rotate 14
}

/usr/local/apache/logs/access_log {
    daily
    nocreate
    compress
    postrotate
        /usr/local/apache/bin/apachectl restart
    endscript
    rotate 14
}
```

Set up OASIS to start upon a system boot. Add these lines to `/etc/rc.d/rc.local`:

```
su - apache -c '/path/to/php /home/webdocs/oasis/mgmt/hourly_maint.php start'
/usr/local/apache/bin/apachectl start
```

Of course you need to substitute your own paths and username in these lines!

Finally, make sure that MySQL and Apache are starting at system boot. Under Linux, you can use `chkconfig` to control what starts up at the various runlevels.

What the install script does

Just so you have a better understanding of what `install.php` does, here's a general breakdown of its responsibilities.

- checks your installation of PHP and MySQL for appropriate versions
- creates OASIS database
- creates OASIS tables
- sets up oasis user (used only by the scripts; hard coded throughout the scripts)
- loads up the OASISPrefs, TrafficProfile, MaxSizes tables
- adds an admin user
- creates log directory
- creates directory for OASIS scripts, management scripts; installs scripts, filling in the location of the log directories, and all MySQL connection info
- reloads mysqld
- runs the hourly script for the first time (passing it the "start" option)

Post-Install Configuration

Many parameters that control the behavior of OASIS are stored in the MySQL database and are accessible via the [Admin interface](#).

However, parameters that affect real-time delivery are not stored in the database, as retrieval of these values would be too expensive. Instead, they are stored in server variables in an Apache configuration file, `oasis_httpd.conf`.

The values in this file are created when the software is installed. They come from the `oasis.cfg` file which you edited before installing the software (you did edit it before you installed, right?) To understand the meaning of the values, see the comments in `oasis.cfg`.

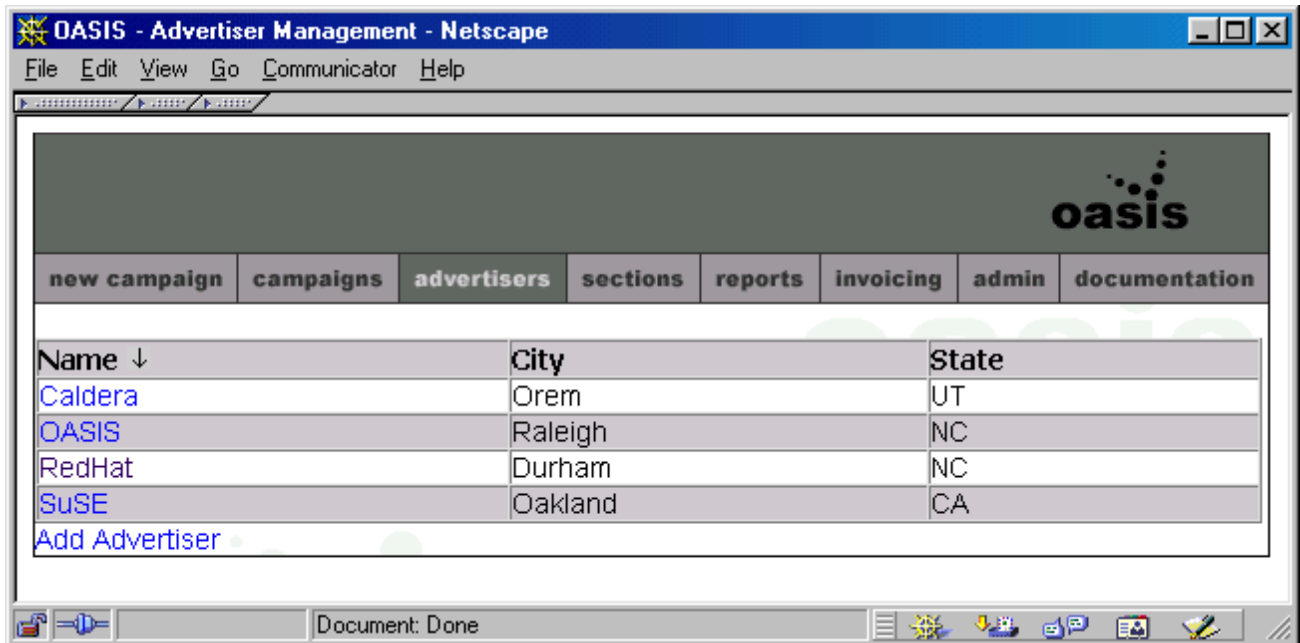
If you need to change any of these values, edit `/etc/httpd/conf/oasis_httpd.conf`, and then restart Apache!

User Interface

OASIS is fully manageable via a PHP Web interface. Campaigns can be created, creatives uploaded, reports run, and delivery monitored using any Web browser.

Advertisers

Enter information about the companies that are buying advertising on your site. This information is critical for generating invoices.



Here you see a list of all of the advertisers in the database. Click on the arrow to reverse the sort order. Click on any column header to sort by that column.

Click "Add Advertiser" to create a new advertiser. To edit an advertiser, click on the advertiser's name.

OASIS - Advertiser Management - Netscape

File Edit View Go Communicator Help

new campaign campaigns **advertisers** sections reports invoicing admin documentation

Advertiser Details

Name

URL

Contact

Street Address

City

State

Postal Code

Country

Phone

Fax

Contact E-mail

Note

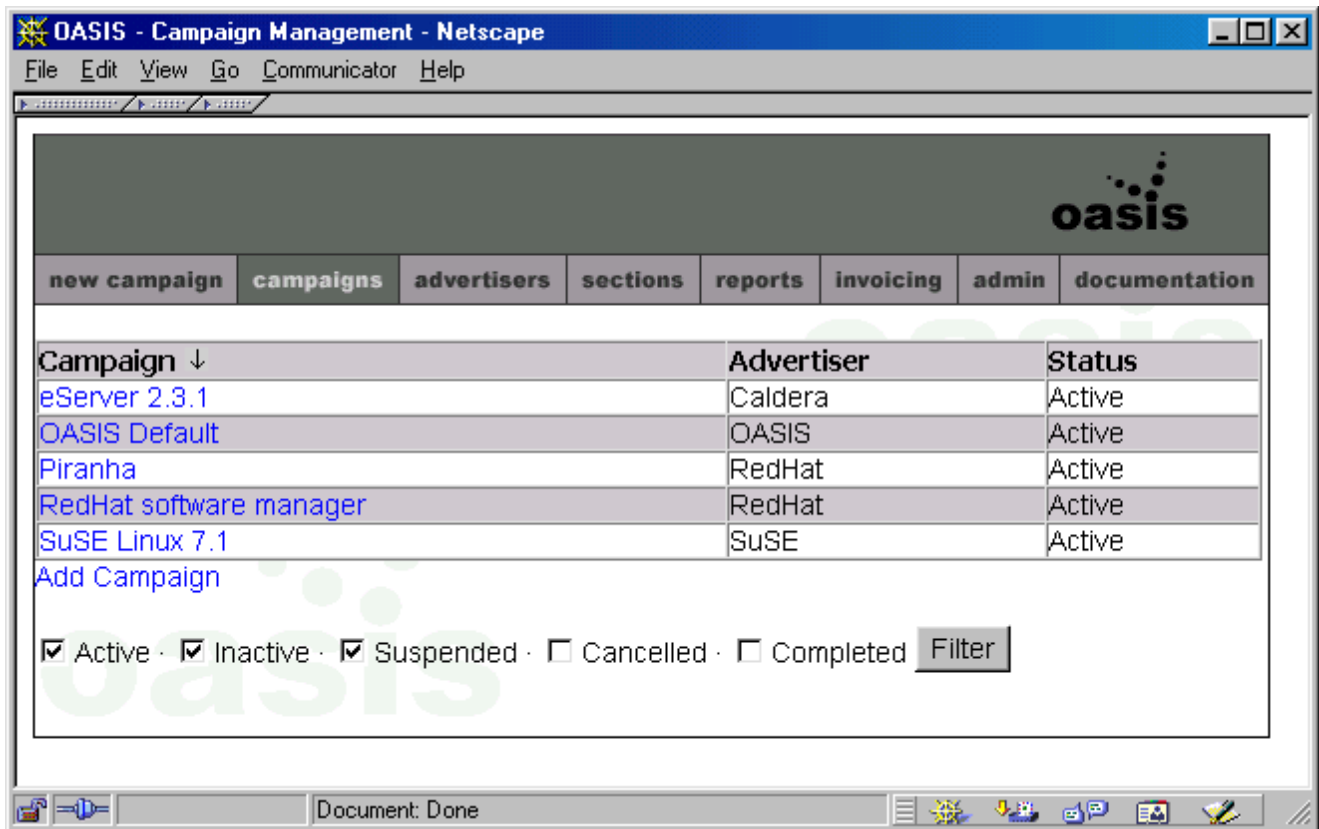
Document: Done

None of the information here is mandatory, but you will not be able to generate useful invoices if you do not enter the complete address information. If you are worried about your users taking shortcuts with this interface, do not grant them access. Make them use the Campaign Insertion interface instead.

The E-mail address entered here will automatically be entered to receive reports on any campaigns created for this advertiser (of course, this can be overridden manually in the campaign interface).

Campaigns

Use this interface to manage your campaigns and creatives.



Here you see a list of all active campaigns in the database. Click on the arrow to reverse the sort order. Click on any column header to sort by that column.

By default, you see campaigns marked "Active", "Inactive", and "Suspended". To see campaigns with other statuses, you can check and uncheck the boxes at the bottom of the form and hit "Filter".

Click on "Add Campaign" to add a new campaign. To edit a campaign, click on the name of the campaign.

OASIS - Campaign Management - Mozilla {Build ID: 2002051006}

oasis

new campaign campaigns advertisers sections reports invoicing admin documentation

Campaign Details

Name: stlouis.com house Status: Active

Advertiser: House

Start Date: [] [] []

End Date: [] [] []

Impressions: 0

Deliver: Evenly by Day

Weight: 10

Overflow OK: ☐

Sunday 12 a.m.
Monday 1 a.m.
Tuesday 2 a.m.
Wednesday 3 a.m.
Thursday 4 a.m.
Friday 5 a.m.
Saturday 6 a.m.

CPM: \$ 0.00 Agency Commission: 0.00 %

CPC: \$ 0.00 Purchase Order: []

Fixed: \$ 0.00 End of Campaign: ☐ Force Invoice: ☐

E-mail Reports: []

Note: house campaign for stlouis.com

Save Delete Copy Campaign

Creatives

Name	Status	Wt	Type/Dim	Preview
stlouis.com house 1	Active	10	Image 468 x 60	stlouis.com house 1 http://www.stlouis.com
stlouis.com house 2			Image	stlouis.com house 2 http://www.stlouis.com

Document: Done (3.96 secs)

Here you see the details of a campaign. Use "Save" to save changes. Use "Delete" to delete the campaign and all associated creatives (you cannot delete a campaign while its status is set to "Active"). You will be prompted to confirm your decision if you opt to delete a campaign.

Use "Copy Campaign" to copy the campaign (and all its creatives and section assignments). A new campaign will be created with identical parameters, and with "Copy of" prepended to the name.

Name

Enter any name you like for the campaign. This name will show up on reports and invoices. Choose carefully.

Advertiser

Select an advertiser from the drop-down list.

Status

There are a number of different status settings for campaigns:

- **Inactive** – the default status; inactive campaigns are not scheduled for delivery
- **Active** – only active campaigns are scheduled; you cannot delete a campaign while it is active. Note that setting a campaign to Active does not make delivery begin immediately (even if the campaign is scheduled to deliver today, you'll have to wait until the Hourly Assignments shared memory segment is rebuilt, normally done by `hourly_maint.php`, but can be done if you manually reload the delivery engine on the admin interface).
- **Suspended** – the campaign will not be scheduled for delivery; functionally, there is no difference between "Suspended" and "Inactive", but you can use this status designation as a sort of reminder to yourself that the campaign is only temporarily halted.
- **Completed** – the maintenance scripts mark a campaign as "Completed" when either its impression target is met or its end date is reached (campaigns end at the *end* of the end date). You cannot do this manually. Completed campaigns do not show up in the campaign list. Obviously, they are not scheduled for delivery, either.
- **Cancelled** – you can manually mark a campaign as cancelled. It will not be scheduled for delivery, and it will not show up in the campaign list. Be very sure that you want to do this, since it will be very difficult to get back to the campaign later. Also, campaigns which are cancelled do not show up in revenue reports, nor are invoices generated for them. If you are halfway through an invoicing period, you may want to suspend the campaign and then cancel it after the invoicing period is over.

Start Date

You do not *have* to enter a start date unless you have an impressions target specified or a fixed cost for the campaign, in which case you must have a start and an end date.

End Date

You do not *have* to enter an end date unless you have an impressions target specified or a fixed cost for the campaign, in which case you must have a start and an end date.

When an end date is set, the campaign will stop delivering at midnight of the day *following* the end date (ie., the campaign will run *through* the entire end date).

Days of Week / Hours of Day

You can specify that a campaign only run on certain days of the week or certain hours of the day. By default, campaigns will run 24/7. In general, it is best to use this option only with campaigns that have no impressions target set, as you may end up making it impossible to meet the impressions target.

Please note that if you select an hour, the campaign will run from the beginning of that hour until the beginning of the next hour. So if you select 8 a.m. through 5 p.m., the campaign will start running at 8 a.m. and stop running at 6 p.m.

If you have selected specific days of the week or hours of the day for the campaign and then specify different days/hours for the creatives, the creatives will only run on the days or hours where the campaign's

selections and the creatives' selections overlap. So for instance, if the campaign is set to run Monday through Friday and the creative is set to run Friday and Saturday, the creative will only run on Friday. If a campaign is set to run from 5 a.m. to noon, and a creative in that campaign is set to run from 2 p.m. to 6 p.m., the creative will not run at all.

Impressions

Enter the number of impressions to be delivered for the campaign. If you enter a number here, you *must* have start and end dates specified.

You can leave this blank (or set to 0) and the campaign will still run, but at a lower priority. All campaigns with impression targets will run first each hour, with the rest picking up whatever is leftover.

Deliver

This setting determines how the campaign will be scheduled to meet its impression target. You can have the delivery done evenly by day, week, or month.

- ***Evenly by Day*** – an equal number of impressions will be delivered each day during the campaign.
- ***Evenly by Week*** – an equal number of impressions will be delivered each week (or week fragment) during the campaign. Weeks begin on Sundays, and each week fragment counts as a whole week. For example, if a campaign begins this Thursday and runs through next Monday, it counts as two weeks. Exactly half the impressions will be scheduled for Thursday through Saturday, and the other half will be scheduled for Sunday through Monday.
- ***Evenly by Month*** – an equal number of impressions will be delivered each month (or month fragment) during the campaign. For example, if a campaign begins on June 15 and ends August 15, it counts as three months (part of June, all of July, and part of August). One-third of the impressions will be scheduled for June 15–30, one-third for July 1–31, and one-third for August 1–15.

Weight

This only matters if you have Impressions set to 0. If so, this represents the relative weight between the campaigns. For example, if you have one campaign with a weight of 5 and another with a weight of 20, the second will run 4 times as often as the first. Keep in mind that campaigns with Impressions=0 run only after those with non-zero Impressions values have gotten their hourly targets. The default weight for a campaign is 10.

Overflow OK

For campaigns with specific impression targets, this value is irrelevant. Such campaigns will always deliver the exact number of impressions specified (assuming there is adequate inventory).

However, for campaigns that do not have specific impression targets, this box indicates whether it is OK to let their hourly delivery "overflow" into the next hour. At the top of each hour, the delivery engine is reloaded. During this reload time, OASIS continues to deliver ads from the overflow delivery tables. What this means is that if you scheduled a campaign with no specific impression target to run from June 1 to June 30, a few impressions may be delivered in the first few seconds of July 1. This may have undesirable results when advertisers' reports are generated, if they expect all impressions to be delivered precisely on the dates scheduled.

It is wise to leave this option checked for at least one site-wide "house" campaign so that you have impressions to deliver during the engine reload period.

By default, all campaigns have this option checked. If you change it at the campaign level, the changes propagate down to the creatives. Also, any new creatives inherit the setting from their parent campaign.

Note, however, that individual creatives can have a different setting from the campaign.

CPM

Enter the CPM (cost per thousand) here. You can leave it empty or set it to zero.

CPC

Enter the CPC (cost per clickthrough) here. You can leave it empty or set it to zero.

Fixed

Enter the fixed cost of the campaign here. You can leave it empty or set it to zero. If you set it to non-zero, you have to specify a start and end date for the campaign (for invoicing purposes). Also, select how the fixed cost is to be paid:

- **End of Campaign** – the full fixed cost is billed in the last invoice period of the campaign
- **CIA** (Cash in advance) – the full fixed cost is billed in the first invoice period of the campaign.
- **By Period** – the fixed cost is prorated across all invoice periods by the number of days in each invoice period.

Agency Commission

If there is an agency commission involved, enter the percentage here. This will be applied to the total charge of each invoice and will be deducted from the net amount due from the advertiser.

Purchase Order

If the advertiser is using a purchase order to place the buy, enter the number here so that it will appear on the invoice.

Force Invoice

If this box is checked, invoices will be generated for this campaign even if CPM, CPC, and Fixed are all 0.

E-mail Reports

A list of e-mail addresses to which should be sent weekly reports of the campaign's performance. Separate multiple addresses using commas. By default, the e-mail address supplied for the advertiser should appear here. You can remove it if you like or add more to it.

Note

Use this space to enter notes about the campaign. Information in this field is purely for your convenience; it has no effect on the operation of the ad server.

Delivery Controls

See the [Delivery Controls](#) section.

Creatives

If the campaign has creatives, they appear on this screen. To edit a creative, click on its name. To add a new creative, click "Add Creative".

Section Assignments

If the campaign has been assigned to sections, they appear on this screen. To change the sections to which this campaign is assigned, click on "Add/Remove Section Assignments".

OASIS - Campaign Management - Mozilla {Build ID: 2002051006}

oasis

new campaign campaigns advertisers sections reports invoicing admin documentation

Campaign: [stlouis.com house](#)

Creative Details

Name Status

Dimensions x MIME Type

Click URL

Weight

Impressions

Content

(not animated)

[Upload new image](#) · [Edit Rich Media](#)

Third Party

Alt Text

Start Date

End Date

Overflow OK ☐

[Add/Remove Section Assignments](#)

Document: Done (3.3 secs)

Here you see the details of a creative. Use "Save" to save changes. Use "Delete" to delete the creative (you cannot delete a creative while its status is set to "Active"). You will be prompted to confirm your decision if you opt to delete a creative.

Use "Copy Creative" to copy the creative (and all its section assignments). A new creative will be created with identical parameters, and with "Copy of" prepended to the name.

Name

Enter any name you like for the creative. This name will appear on reports, so you might want something fairly descriptive.

Status

There are a number of different status settings for creatives:

- **Active** – the default status. Only active creatives in active campaigns are scheduled; you cannot delete a creative while it is active.
- **Suspended** – the creative will not be scheduled for delivery.
- **Completed** – the maintenance scripts mark a creative as "Completed" when either its impression target is met or its end date is reached (creatives end at the *end* of the end date). You cannot do this manually. Obviously, completed creatives are not scheduled for delivery.
- **Cancelled** – you can manually mark a creative as cancelled. It will not be scheduled for delivery.

By default, a creative is set to "Active". If it has an end date or impression target set, when it hits either, it will be set to "Completed". You can set it manually to "Cancelled" if you need to stop it from running.

Dimensions

These are automatically filled in when you upload an image file or enter a ThirdParty URL, but you can override them. Do so at your own risk.

MIME Type

This is automatically set when an image is uploaded or a ThirdParty URL is entered. OASIS currently recognizes (with the help of ImageMagick's `identify` program) GIFs, JPEGs, and PNGs.

Clickthrough URL

The URL to which a user will be redirected if he clicks on the banner.

Weight

This is the weight of this creative relative to the other creatives in the campaign. This only matters if the creative does not have an impression target set. The default weight for a creative is 10.

Impressions

You can set an impression target for a creative. Suppose the campaign is scheduled for 100,000 impressions. It has two creatives, and you want to make sure that one gets exactly 200,000 impressions. You can set this here. (Note that setting the weight of one creative to 1 and the other to 4 would have *almost* the same effect, but there would be no guarantee that the first would get *exactly* 200,000 impressions).

Of course, you cannot set this value greater than the impression total for the campaign.

Also note that if you set this value to a number less than the impression total for the campaign, you must have another creative to "pick up the slack", that is, the sum of Impressions for all creatives must equal the campaign total, or there must be at least one creative that has Impressions=0.

Third Party

If this ad is a third-party redirection, enter the other ad server's banner URL here. Use the special tags:

- [OASISCB] for a random cache-busting number:
- [OASISTIMESTAMP] for a UNIX-style timestamp (seconds since Jan 1, 1970)

- [OASISREFERER] for the URL of the referring page

For example:

```
http://ad-adex3.flycast.com/server/ad/WRALOnLine/FlycastROS/?cb=[OASISCB]
```

At delivery time, [OASISCB] will be replaced with a random number to prevent caching.

Start Date

The start date for the creative. By default, it will just use the start date of the campaign. If you set this to something earlier than the campaign's start date, the campaign's start date will override.

End Date

The end date for the creative. By default, it will just use the end date of the campaign. If you set this to something later than the campaign's end date, the campaign's end date will override.

When an end date is set, the creative will stop delivering at midnight of the day *following* the end date (ie., the creative will run *through* the entire end date.

Overflow OK

See the description of Overflow OK under the Campaign documentation.

Days of Week / Hours of Day

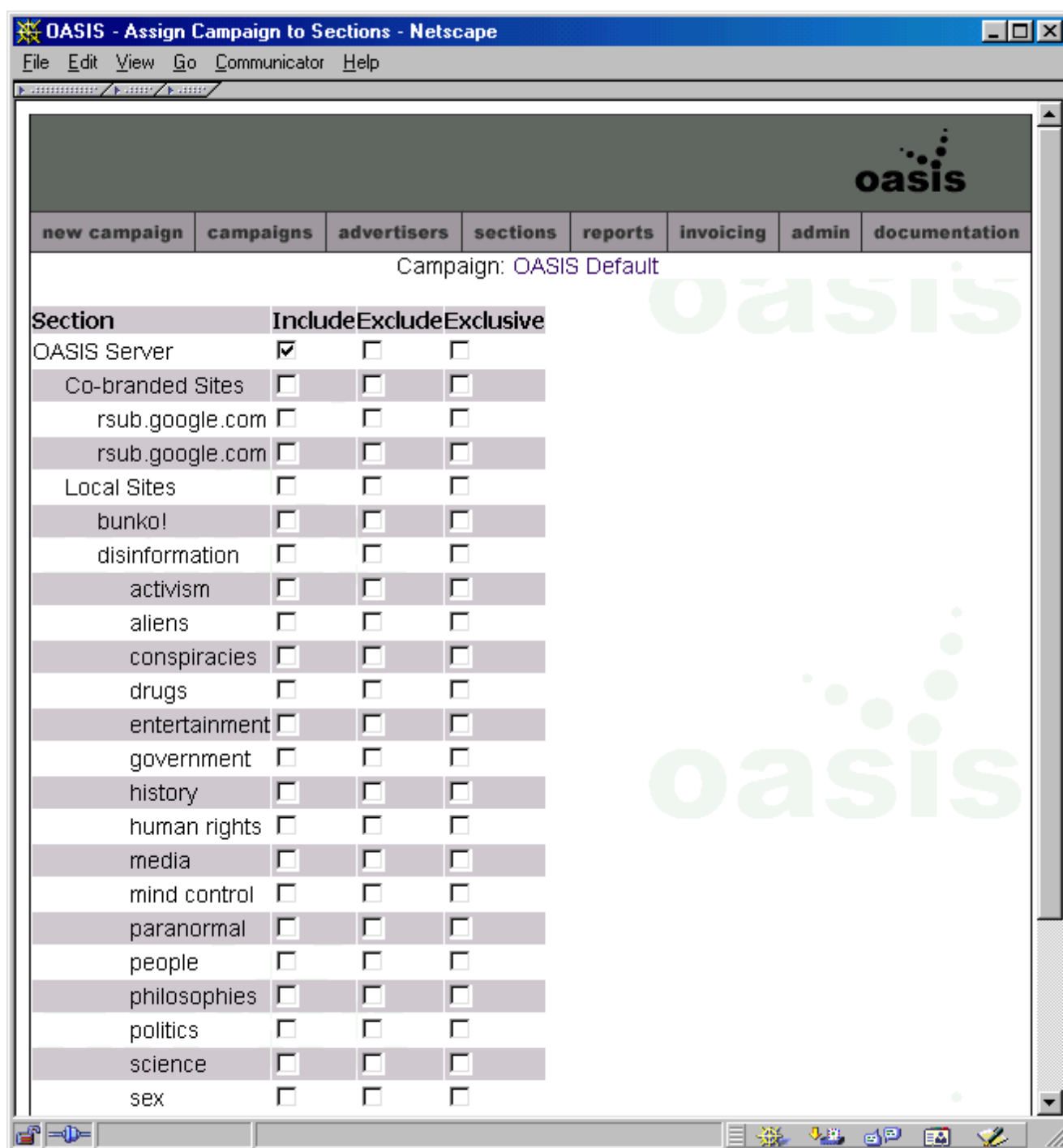
You can specify that a creative only run on certain days of the week or certain hours of the day. By default, creatives will run 24/7. In general, it is best to use this option only with campaigns/creatives that have no impressions target set, as you may end up making it impossible to meet the impressions target.

Please note that if you select an hour, the creative will run from the beginning of that hour until the beginning of the next hour. So if you select 8 a.m. through 5 p.m., the creative will start running at 8 a.m. and stop running at 6 p.m.

If you have selected specific days of the week or hours of the day for the campaign and then specify different days/hours for the creatives, the creatives will only run on the days or hours where the campaign's selections and the creatives' selections overlap. So for instance, if the campaign is set to run Monday through Friday and the creative is set to run Friday and Saturday, the creative will only run on Friday. If a campaign is set to run from 5 a.m. to noon, and a creative in that campaign is set to run from 2 p.m. to 6 p.m., the creative will not run at all.

Section Assignments

If the creative has been assigned to sections, they appear on this screen. To change the sections to which this campaign is assigned, click on "Add/Remove Section Assignments".



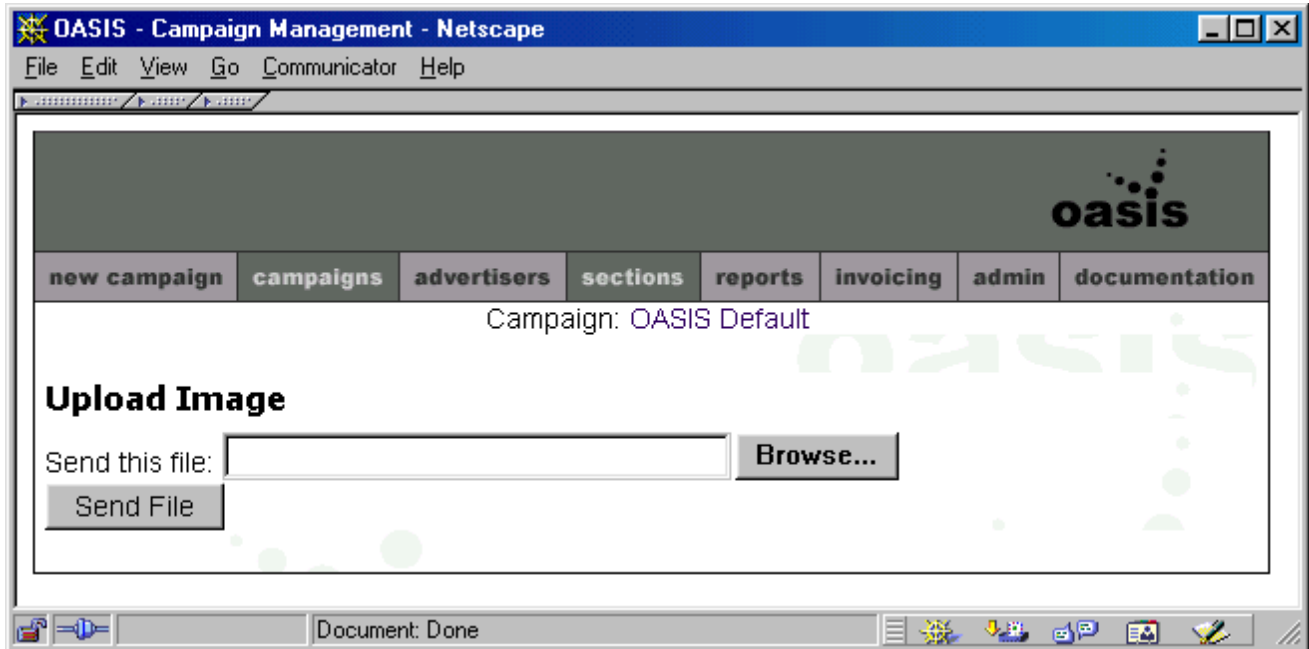
This is the section assignment screen. It looks almost identical for both campaigns and creatives. On this screen, you see the entire section tree, with the option to "Include", "Exclude", or make "Exclusive" the campaign/creative on a particular section.

Each hour, the maintenance script assigns creatives to sections, propagating these assignments down the section tree. They are processed in this order:

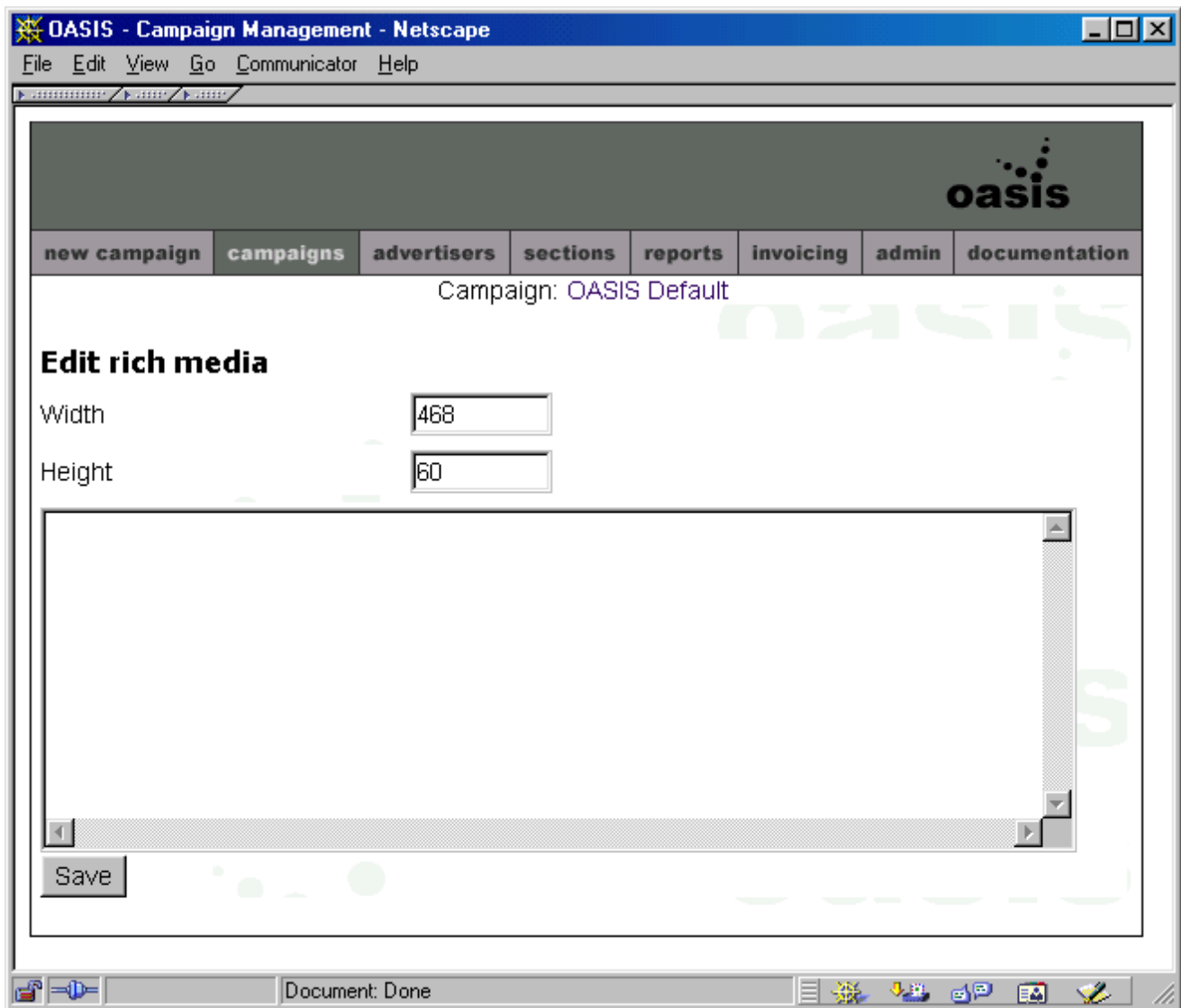
1. Campaign Includes
2. Creative Includes
3. Campaign Excludes

4. Creative Excludes
5. Campaign Exclusives
6. Creative Exclusives

In this way, creative assignments always override those of their parent campaigns. Also, exclusive assignments override all others.



Uploading a new banner is simple. From the creative editing form, click on "Upload new image". Hit "Browse..." to look for a file on your computer. Once you find it, click "Send File" to upload it. Assuming that it is small enough for its dimensions (the administrator defines a maximum size for each dimension of creative), you will be taken back to the Creative Details screen where you can edit the creative properties further.



You can edit rich media ads using this form. From the creative editing form, click on "Edit rich media". Then enter the width and height of your ad. You can enter any HTML (or for that matter, any markup language) you wish. This code may reference files on other Web servers, like images, Shockwave files, or Java applets.

To see what your rich media ad will look like in a browser, hit "Save". On the creative editing form, click "Preview rich media". A new window should pop up with your ad in it.

Note that rich media ads cannot be served if you're using IMG-based tagging (`oasisi.php`). You need to use either the embedded method or the IFRAME method. See the Tagging section of the manual for more information.

To track clickthroughs with Rich Media ads, you can use special tags in the creative's source (introduced in version 1.1.2):

```
[OASISCLICK:http://actual.url.here/]
```

will be replaced at delivery time with the appropriate clickthrough URL, and the resulting URL will record the

User Interface

click and redirect the user to `http://actual.url.here/`. The section, size, and creative will be recorded in the database when a user clicks on the link. You may include multiple clickthrough links in a single rich media creative, each with a different URL if you like.

Note that you can use the `OASISCLICK` tag in a standard HTML hyperlink:

```
<A HREF="[OASISCLICK:http://actual.url.here/]">
```

or you can do other things like pass them to Java applets:

```
<PARAM NAME="URL1" VALUE="[OASISCLICK:http://actual.url.here/]">
```

OASIS will tie the clicks back to the right creative. Unfortunately, if you have different links in the same creative, you won't be able to tell them apart in the reports at this point.

Delivery Controls

Delivery controls allow you to fine-tune the audience for a creative or an entire campaign. Click on "Delivery Controls" from the campaign interface or the creative interface to define the controls for your ads.

You will see the following interface:

The dropdowns allow you to specify the following:

- **Delivery**
 - ◆ *Deliver* – provide preferential delivery to impressions that satisfy this delivery control
 - ◆ *Deliver only* – deliver only when the impression satisfies this delivery control
 - ◆ *Do not deliver* – do not deliver to impressions that satisfy this delivery control
 - **Filter Type**
 - ◆ *IP address* – compare the IP address of the visitor to the specified pattern
 - ◆ *Domain* – compare the hostname of the visitor to the specified pattern (this is slower than using the IP address, as it requires a name server lookup)
 - ◆ *Language* – compare the accepted language (as stated by the visitor's browser) to the specified pattern
 - ◆ *User agent* – compare the browser's User Agent string to the specified pattern
 - ◆ *Keyword* – compare the value of the "k" CGI variable to the specified pattern; note that keyword matches take priority over other delivery control matches
 - ◆ *Country* – using geotargeting information, deliver based on the visitor's country; format of the codes depends on your geodata provider's database.
- OASIS is compatible with Digital Envoy's NetAcuity geotargeting server. Contact Digital Envoy (<http://www.digitalenvoy.net/>) for special pricing for OASIS users.
- ◆ *State* – using geotargeting information, deliver based on the visitor's region within his country; format of the region names depends on your geodata provider's database (but they are returned as "country_code:region_name", regardless of how the country code and region name themselves are formatted)
 - ◆ *Metro Area* – using geotargeting information, deliver based on the visitor's metro area (if available); returned as "country_code:region_name:metro_area"
 - ◆ *City* – using geotargeting information, deliver based on the visitor's city; returned as "country_code:region_name:metro_area:city_name"
 - ◆ *PHP Expression* – you can enter an arbitrary PHP expression that will be evaluated at delivery time; note that "Pattern Type" has no effect on PHP Expressions
- **Sense**
 - ◆ *Matches* – the delivery control is satisfied if the designated filter matches the specified pattern
 - ◆ *Does not match* – the delivery control is satisfied if the designated filter does not match the specified pattern
 - **Pattern type**
 - ◆ *String* – the pattern is a simple string; any part of the test value can match the pattern

Examples:

Pattern	Test value	Result
199.72	199.72.1.1	matches
	251.8.127.9	does not match

User Interface

foo	somehost.foo.com	matches
	somehost.bar.com	does not match

- ◆ *Wildcard* – the pattern is a wildcard pattern, with the special characters '?' and '*' representing any single character or any single group of 0 or more characters, respectively.

Examples:

Pattern	Test value	Result
foo	somehost.foo.com	matches
*foo	somehost.foo.com	does not match
foo*	somehost.foo.com	does not match
somehost?foo.com	somehost.foo.com	matches
somehost.?foo.com	somehost.foo.com	matches

- ◆ *Regular expression* – the pattern is a perl-compatible regular expression; for power users only.

• **Pattern**

The pattern which is to be compared. The syntax of this pattern depends on the pattern type.

You can specify multiple patterns by separating them with commas. Note that because of this, you cannot use commas in your patterns (this should not be a problem, as a comma would not be very useful in defining the various types of patterns).

After adding delivery controls, the interface looks like this:

Delivery controls can be considered as a group of rules for delivering a creative. When the delivery engine is evaluating each creative to determine whether or not to deliver it, it evaluates all the delivery controls for that creative. If a delivery control is satisfied, action is taken based on how you have specified the delivery option for each rule.

A delivery control is satisfied when the filter variable matches one? all? of your patterns (if you have selected "do not match", the control is satisfied when the filter variable does not match).

If a creative's delivery control specifies "Deliver", and it is satisfied, the creative will get preferential weighting. The first creative encountered by the delivery engine with a satisfied "Deliver" control will be delivered to the end user.

If a creative's delivery control specifies "do not deliver", and it is satisfied, the creative will not be delivered at all.

If a creative's delivery control specifies "deliver only", and it is satisfied, the creative will be delivered; if the control is not satisfied, the creative will not be delivered.

Note that a satisfied "do not deliver" control or an unsatisfied "deliver only" control will override a satisfied "deliver" or a satisfied "deliver only" control. In such a situation, the creative will not be delivered.

Let's consider the following example:

Creative 1 DC1–1 Deliver when Language matches String en

User Interface

	DC1–2	Deliver when	Language	matches	String	fr
	DC1–3	Do not deliver when	Domain	matches	Wildcard	*.yahoo.*
Creative 2	DC2–1	Deliver when	User agent	matches	Wildcard	Gecko*
	DC2–2	Deliver only when	IP address	matches	String	199.72
Creative 3	DC3–1	Deliver only when	Keyword	matches	String	beer
Creative 4	DC4–1	Deliver when	Language	does not match	String	fr
Creative 5	DC5–1	Deliver when	Keyword	matches	Wildcard	win*2000

Now consider the following series of requests:

IP address	204.66.101.92
Domain	www.foo.com
Language	en-us
User agent	Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Keyword	–

The delivery controls for Creative 1 are checked; DC1–1 is satisfied while DC1–2 and DC1–3 are not. Creative 1 will get preferential delivery. Creative 2's delivery controls are checked; DC2–1 is not satisfied, and neither is DC2–2. Since DC2–2 stipulates "deliver only when", Creative 2 will not be considered for delivery. Creative 3's delivery controls are checked; DC3–1 is not satisfied; because it stipulates "deliver only when", it will not be considered for delivery. Creative 4's delivery controls are checked; DC4–1 is satisfied, so Creative 4 will get preferential delivery. Finally, Creative 5's delivery controls are checked; DC5–1 is not satisfied, so Creative 5 gets normal priority for delivery.

Creatives 1 and 4 get preferential delivery, so one of the two will be selected arbitrarily for delivery. As soon as one of them has reached its impression target, the other will be selected for all such future impressions.

IP address	199.72.8.96
Domain	www.bar.com
Language	en-us
User agent	Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Keyword	windows 2000

DC1–1 is satisfied, DC1–2 and DC1–3 are not. Creative 1 will get preferential delivery. DC2–1 is not satisfied; DC2–2 is. Creative 2 will also get preferential delivery. DC3–1 is not satisfied, so Creative 3 will not be considered. DC4–1 is satisfied, so Creative 4 will get preferential delivery. DC5–1 is satisfied, so Creative 5 will get preferential delivery; since this is a keyword delivery control, it will take priority over the other delivery controls, and Creative 5 will be selected.

Campaign Insertion

The Campaign Insertion interface is designed to work like a "wizard", a popular interface design for tools for novices. It is intended to step the user through the creation of a new campaign, validating each piece of information as it is entered, leaving no room for error.

OASIS - Campaign Insertion - Netscape

File Edit View Go Communicator Help

new campaign campaigns advertisers sections reports invoicing admin documentation

New Campaign

Choose an advertiser:

-- OR --

Enter info for a new advertiser:

Name *

Street Address *

City *

State *

Postal Code *

Country

Phone

Fax

Contact E-mail

* Required fields if entering a new advertiser

Next ->

Document: Done

The initial screen prompts the user for advertiser information. If the advertiser is already in the database, you can just select it from the dropdown box. Otherwise, you must enter all the fields that have asterisks by them. These fields are required because of their importance in invoicing.

Hit "Next" to proceed to the next screen.

OASIS - Campaign Insertion - Netscape

File Edit View Go Communicator Help

new campaign campaigns advertisers sections reports invoicing admin documentation

New Campaign

Campaign Name

Num Impressions

Fixed \$ End of Campaign

CPM \$

CPC \$

Agency Commission %

Purchase Order

Force Invoice ☐

E-mail Reports

Document: Done

On this screen, you must enter a Campaign Name and a value in Fixed, CPM, or CPC. You may enter 0 for Fixed if this campaign is not a revenue-generating campaign. By default, invoices are not generated for non-revenue campaigns. If you wish an invoice to be sent to a client (of course, it will show \$0 due, but it will provide a report of the campaign's performance), check the box labeled "Force Invoice".

CPM

Enter the CPM (cost per thousand) here. You can leave it empty or set it to zero.

CPC

Enter the CPC (cost per clickthrough) here. You can leave it empty or set it to zero.

Fixed

Enter the fixed cost of the campaign here. You can leave it empty or set it to zero. If you set it to non-zero, you have to specify a start and end date for the campaign (for invoicing purposes) Also, select how the

fixed cost is to be paid:

- **End of Campaign** – the full fixed cost is billed in the last invoice period of the campaign
- **CIA** (Cash in advance) – the full fixed cost is billed in the first invoice period of the campaign. The campaign insertion interface will automatically generate an invoice for the campaign if you choose CIA, marking it as paid, but not sent.
- **By Period** – the fixed cost is prorated across all invoice periods by the number of days in each invoice period.

Agency Commission

If there is an agency commission involved, enter the percentage here. This will be applied to the total charge of each invoice and will be deducted from the net amount due from the advertiser.

Purchase Order

If the advertiser is using a purchase order to place the buy, enter the number here so that it will appear on the invoice.

E-mail Reports

A list of e-mail addresses to which should be sent weekly reports of the campaign's performance. Separate multiple addresses using commas. By default, the e-mail address supplied for the advertiser should appear here. You can remove it if you like or add more to it.

The screenshot shows a Netscape browser window titled "OASIS - Campaign Insertion - Netscape". The address bar shows a URL starting with "http://". The browser's menu bar includes "File", "Edit", "View", "Go", "Communicator", and "Help". The main content area displays the "OASIS" logo and a navigation bar with the following tabs: "new campaign", "campaigns", "advertisers", "sections", "reports", "invoicing", "admin", and "documentation". The "new campaign" tab is selected.

The "New Campaign" section contains the following form elements:

- Set start and end dates:**
 - Start Date: A dropdown menu showing "April", followed by a dropdown for "1", and a dropdown for "2001".
 - End Date: A dropdown menu showing "April", followed by a dropdown for "30", and a dropdown for "2001".
 - Below the date fields are two buttons: "Prev month" and "Next month".
- Deliver:** A dropdown menu showing "Evenly by Day".
- A text instruction: "You may clear out the end date if you want the campaign to run indefinitely; however, you must have an end date if you plan to enter a target number of impressions."
- A "Next ->" button at the bottom right of the form.

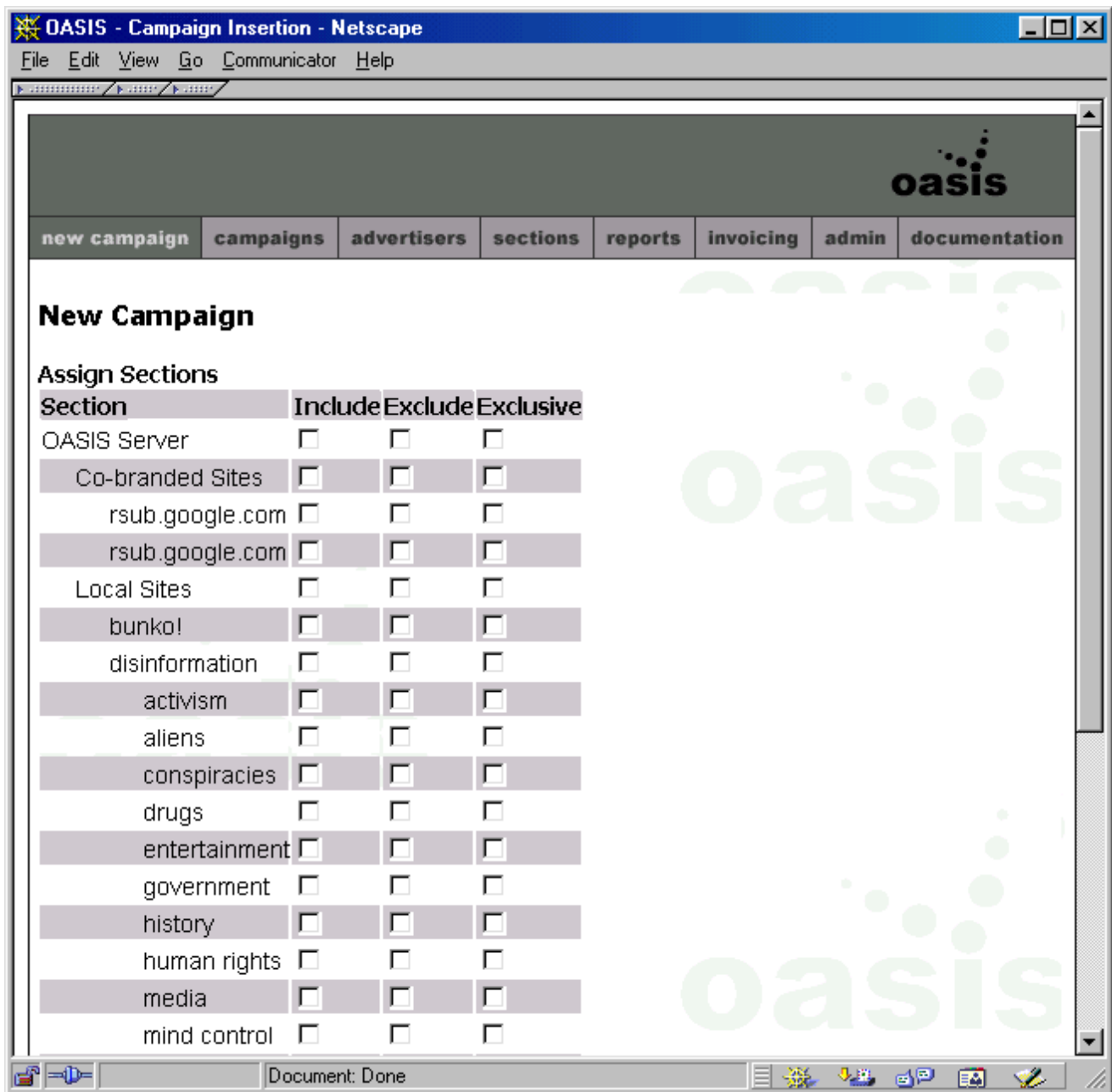
The browser's status bar at the bottom shows "Document: Done" and various icons for file operations and network status.

On this screen, you must enter a start and end date. You can use the "Prev month" and "Next month" buttons to jump forward and back in increments of one month (these buttons will always default to the first of the month for the start date and the last of the month for the end date).

Deliver

This setting determines how the campaign will be scheduled to meet its impression target. You can have the delivery done evenly by day, week, or month.

- ***Evenly by Day*** – an equal number of impressions will be delivered each day during the campaign.
- ***Evenly by Week*** – an equal number of impressions will be delivered each week (or week fragment) during the campaign. Weeks begin on Sundays, and each week fragment counts as a whole week. For example, if a campaign begins this Thursday and runs through next Monday, it counts as two weeks. Exactly half the impressions will be scheduled for Thursday through Saturday, and the other half will be scheduled for Sunday through Monday.
- ***Evenly by Month*** – an equal number of impressions will be delivered each month (or month fragment) during the campaign. For example, if a campaign begins on June 15 and ends August 15, it counts as three months (part of June, all of July, and part of August). One-third of the impressions will be scheduled for June 15–30, one-third for July 1–31, and one-third for August 1–15.



On this screen, you assign the campaign to sections. You see the entire section tree, with the option to "Include", "Exclude", or make "Exclusive" the campaign/creative on a particular section.

Each hour, the maintenance script assigns creatives to sections, propagating these assignments down the section tree. They are processed in this order:

1. Campaign Includes
2. Creative Includes
3. Campaign Excludes
4. Creative Excludes
5. Campaign Exclusives
6. Creative Exclusives

In this way, creative assignments always override those of their parent campaigns. Also, exclusive assignments override all others.

OASIS - Campaign Insertion - Netscape

File Edit View Go Communicator Help

new campaign campaigns advertisers sections reports invoicing admin documentation

New Campaign

Add Creative

CreativeName

File

Alt Text

Third Party

Clickthrough URL

Document: Done

Now it is time to add the creatives to the campaign. For each creative, enter a name and a clickthrough URL. You'll also need to either browse for a local file or enter a URL for a third party ad server.

If this ad is a third-party redirection, enter the other ad server's banner URL here. Use the special tags:

- [OASISCB] for a random cache-busting number:
- [OASISTIMESTAMP] for a UNIX-style timestamp (seconds since Jan 1, 1970)
- [OASISREFERER] for the URL of the referring page

For example:

```
http://ad-adex3.flycast.com/server/ad/WRALOnLine/FlycastROS/?cb=[OASISCB]
```

At delivery time, [OASISCB] will be replaced with a random number to prevent caching.

If you want to set up another creative, hit "More". Otherwise, hit "Finish".

OASIS - Campaign Insertion - Netscape


File Edit View Go Communicator Help

new campaign campaigns advertisers sections reports invoicing admin documentation

New Campaign

Advertiser: RedHat
Campaign: Free hat
Start Date: 2001-04-01
End Date: 2001-04-30
Impressions: 1,000,000 (delivered evenly by Day)
CPM: \$ 5.75

Creatives
Free Hat 1

get the FREE...  [CLICK HERE](#)

Please review the information above. If you are satisfied, press the Save button below.

[Save](#)

Document: Done

The last step is to look over the summary of the campaign. If all looks well, hit "Save". Depending on how the administrator has configured the server, your campaign may go live immediately, or it may be entered as an "Inactive" campaign, with e-mail going to the administrator, who can make it live.

Sections

OASIS uses a hierarchical tree of "Sections" to manage which ad banners get served on which pages. Each campaign in the system is assigned to one or more sections. The campaign will then run on that section and all sections beneath it in the tree.

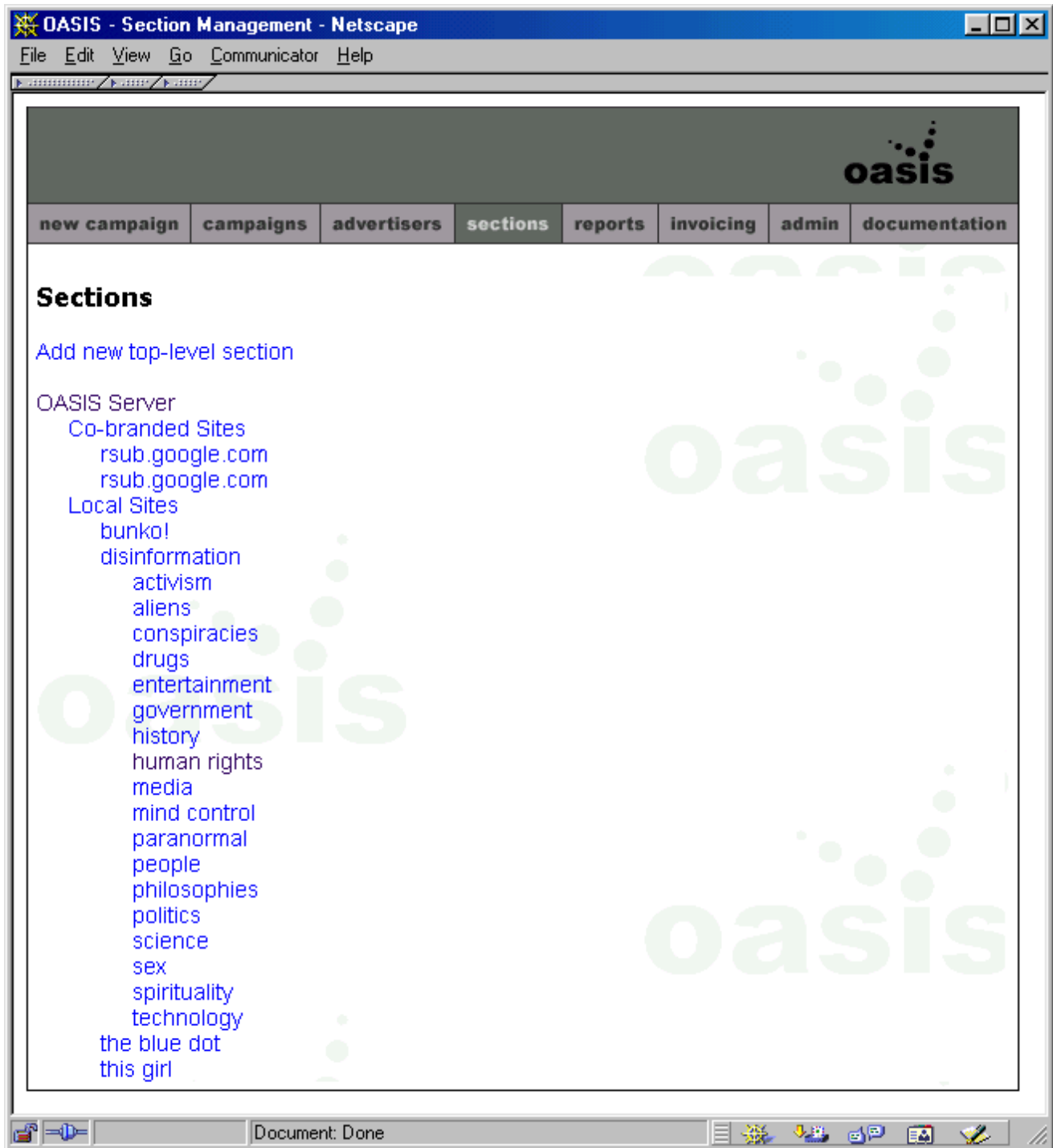
Additional power and flexibility comes from the ability to *exclude* a campaign from a section. So with the tree shown below, you could easily run a campaign on all the subsections of `disinformation` except `activism` by including the campaign on `disinformation` and excluding it from `activism`.

In addition, you can assign a campaign to a section as an *exclusive*, so that no other campaigns can run on that section. Care must be taken when using these exclusive assignments. Imagine if you tried to assign campaign B to `activism` exclusively, but you had already assigned campaign A to `disinformation` exclusively!

To further complicate matters, creatives can be assigned to sections independently of their parent campaigns. All conflicting creative assignments override those of the parent campaign.

Each hour, the maintenance script assigns creatives to sections, propagating these assignments down the section tree. They are processed in this order:

1. Campaign Includes
2. Creative Includes
3. Campaign Excludes
4. Creative Excludes
5. Campaign Exclusives
6. Creative Exclusives



The main Section management screen displays the full section tree. Click "Add a new top-level section" to add a new section with no parents (ie., start a new tree). Click on any of the section names to edit or delete them or to add subsections.

OASIS - Section Management - Netscape

File Edit View Go Communicator Help

oasis

new campaign campaigns advertisers **sections** reports invoicing admin documentation

Name:

Report Name:

Active: ☒

Subsections

- activism
- aliens
- conspiracies
- drugs
- entertainment
- government
- history
- human rights
- media
- mind control
- paranormal
- people
- philosophies
- politics
- science
- sex
- spirituality
- technology

[Add new subsection](#)

Sample tags:

Document: Done

On the section edit form, you see the two names given to the section (one is a shorter name, used in hierarchical displays of the section tree), and the other is used on reports, where you don't have the context of knowing what the parent section is.

You can also mark a section as active or inactive by checking or unchecking the checkbox next to "Active". If a section is marked inactive, no creatives will be assigned to it or any of its children. Also, you won't get error reports if the inventory checker finds that no creatives are assigned to inactive sections. If all your campaigns for a particular section complete, and you don't intend to run any more on it for a while, you might want to mark it as inactive.

User Interface

Hit "Save" to save changes you make to the names. Hit "Delete" to delete the section (and all subsections). You will be prompted to confirm this decision.

The entire tree below the current section is displayed. To add a new subsection to the current section, click "Add new subsection". To edit or delete a subsection, click on its name

You can generate sample ad tags. Select the tag type (based on what you're using on your site). Select the dimension of the creative you want to display (this list is pulled from the Max Sizes you've defined in the Admin interface). Then press "View tag", and a new window should pop up with the code ready to copy and paste into your pages.

Finally, if there are campaigns or creatives assigned to this section, they appear in tables on this page. These lists are only those campaigns and creatives assigned explicitly to the current section, not those assigned to parent sections (propagating the assignments down the tree is computationally intensive, so it would not be wise to perform it every time we display this form).

Reports

There are four types of reports in OASIS:

- revenue
- inventory
- campaign
- section

Select the type of report and set up any necessary parameters on the Reports page. The revenue report requires a start and end date. The inventory report requires a section and depth (the start and end dates are defined a priori in the Preferences under the Admin interface). The campaign report requires selecting a campaign and a start and end date. The Section report requires a section, a depth, and start and end dates.

The screenshot shows a Netscape browser window titled "OASIS - Reports - Netscape". The address bar is empty. The menu bar includes "File", "Edit", "View", "Go", "Communicator", and "Help". The main content area has a dark header with the "oasis" logo. Below the header is a navigation bar with tabs: "new campaign", "campaigns", "advertisers", "sections", "reports" (selected), "invoicing", "admin", and "documentation". The "Reports" section is active, displaying a form with the following elements:

- Reports** (Section Header)
- Four radio buttons for report types: "Revenue", "Inventory", "Campaign", and "Section".
- For "Inventory" and "Section": A dropdown menu for selection and a "Depth:" dropdown menu.
- For "Revenue", "Campaign", and "Section": A "Start Date" field with month, day, and year dropdowns (set to March 1, 2001) and an "End Date" field with month, day, and year dropdowns (set to March 31, 2001).
- Buttons for "Prev month" and "Next month" below the date fields.
- A "Build Report" button at the bottom.

The status bar at the bottom of the browser shows "Document: Done" and various icons.

Revenue Report

The revenue report summarizes all invoiceable revenue accrued during the specified period. It does not project revenue into the future, so CPM and CPC charges are only computed for impressions and clickthroughs that have actually been delivered.

The average CPM is equal to the total revenue from CPM charges divided by all impressions (whether sold by impression or not).

The average CPC is equal to the total revenue from CPC charges divided by all clickthroughs (whether sold by clickthrough or not).

See the sample revenue report at the end of this section.

Inventory Report

This report shows you projected inventory for the specified section (down to the depth you specified). It also shows you how much of that inventory is allocated (based on nightly simulations). By clicking on a date, you can get a breakdown of the sections' inventory for that day.

To change the number of days forward the projections are made or the number of days' worth of back data used, change the InvDaysForward or InvDaysBack preferences with the Admin interface.

Campaign Report

A campaign report summarizes all activity for a given campaign for the specified period. This is the same exact report that is sent to an advertiser each week, summarizing the performance of the campaign for the week.

Formulas:

- Clickthrough rate = Clickthroughs / Total Impressions * 100
- Impression error rate = Impression Errors / Total Impressions * 100
- Click error rate = Click Errors / (Total Clicks + Click Errors) * 100

The campaign's numbers are broken out by creative, by date, by hour, and by section.

See the sample campaign report at the end of this section.

Section Report

A section report summarizes all activity for a given section for the specified period. You can use this report to get an idea of how many impressions you have to give in a particular section of your site. When you select a section for the report, you must select a depth. Choose "All" to see numbers for the entire tree beneath your selected section. Choose "1" to only see the numbers for the selected section itself. Choose 2 – 5 to see more or less of the tree.

Formulas:

- Clickthrough rate = Clickthroughs / Total Impressions * 100

User Interface

- Impression error rate = $\text{Impression Errors} / \text{Total Impressions} * 100$
- Click error rate = $\text{Click Errors} / (\text{Total Clicks} + \text{Click Errors}) * 100$

The section's numbers are broken out by campaign, by creative, by date, by hour, and by section.

See the sample section report at the end of this section.

Sample Revenue Report

Revenue Report






































































From 2000-08-01 to 2000-08-31

Campaign	Impressions			Fixed	Gross	Comm.	Net Due
Alltel Weather Watch Alltel	106,344	\$ 10.00	\$ 1,063.44	–	\$ 1,063.44	–	\$ 1,063.44
First Citizens Summer Engel Fritts Hanna &O'Neill	59,877	\$ 30.00	\$ 1,796.31	–	\$ 1,796.31	(269.45)	\$ 1,526.86
Lowry Ophthalmology Lowry Ophthalmology	55,515	\$ 10.00	\$ 555.15	–	\$ 555.15	–	\$ 555.15
Mann ENT Summer Campaign Dr. Charles Mann	61,929	\$ 10.00	\$ 619.29	–	\$ 619.29	–	\$ 619.29
Survivor Challenge The Spin Cycle	30,480	\$ 16.00	\$ 487.68	–	\$ 487.68	–	\$ 487.68
BellSouth August I-Pipe	124,003	\$ 3.00	\$ 372.01	–	\$ 372.01	–	\$ 372.01
MarieGifts.com Aug.–Sept. Marie Gifts	9,706	\$ 247.27	–	\$ 2,400.00	\$ 2,400.00	–	\$ 2,400.00
Totals:	447,854	\$ 10.93	\$ 4,893.88	\$ 2,400.00	\$ 7,293.88	(\$ 269.45)	\$ 7,024.43

























Sample Inventory Report

Inventory Report

www.wral.com, depth=all

Date	Projected Inventory	Inventory Allocated
2000-11-29	602,006 	34,600 5.7 % 
2000-11-30	610,448 	34,700 5.7 % 
2000-12-01	517,312 	16,800 3.2 % 
2000-12-02	245,089 	16,900 6.9 % 
2000-12-03	306,169 	16,900 5.5 % 
2000-12-04	695,438 	16,800 2.4 % 
2000-12-05	666,875 	16,900 2.5 % 
2000-12-06	602,006 	16,700 2.8 % 
2000-12-07	610,448 	16,900 2.8 % 
2000-12-08	517,312 	16,700 3.2 % 
2000-12-09	245,089 	16,800 6.9 % 
2000-12-10	306,169 	16,700 5.5 % 
2000-12-11	695,438 	16,800 2.4 % 
2000-12-12	666,875 	16,700 2.5 % 
2000-12-13	602,006 	16,700 2.8 % 
2000-12-14	610,448 	16,700 2.7 % 
2000-12-15	517,312 	16,700 3.2 % 
2000-12-16	245,089 	16,700 6.8 % 
2000-12-17	306,169 	16,900 5.5 % 
2000-12-18	695,438 	16,700 2.4 % 
2000-12-19	666,875 	16,900 2.5 % 
2000-12-20	602,006 	16,600 2.8 % 
2000-12-21	610,448 	16,900 2.8 % 
2000-12-22	517,312 	16,600 3.2 % 
2000-12-23	245,089 	13,300 5.4 % 
2000-12-24	306,169 	13,300 4.3 % 
2000-12-25	695,438 	13,300 1.9 % 
2000-12-26	666,875 	13,300 2.0 % 
2000-12-27	602,006 	13,200 2.2 % 
2000-12-28	610,448 	13,300 2.2 % 
2000-12-29	517,312 	13,200 2.6 % 
2000-12-30	245,089 	13,300 5.4 % 
2000-12-31	306,169 	34,700 11.3 % 
2001-01-01	695,438 	0 0.0 %
2001-01-02	666,875 	0 0.0 %
2001-01-03	602,006 	0 0.0 %

User Interface

<u>2001-01-04</u>	610,448		0	0.0 %	
<u>2001-01-05</u>	517,312		0	0.0 %	
<u>2001-01-06</u>	245,089		0	0.0 %	
<u>2001-01-07</u>	306,169		0	0.0 %	
<u>2001-01-08</u>	695,438		0	0.0 %	
<u>2001-01-09</u>	666,875		0	0.0 %	
<u>2001-01-10</u>	602,006		0	0.0 %	
<u>2001-01-11</u>	610,448		0	0.0 %	
<u>2001-01-12</u>	517,312		0	0.0 %	
<u>2001-01-13</u>	245,089		0	0.0 %	
<u>2001-01-14</u>	306,169		0	0.0 %	
<u>2001-01-15</u>	695,438		0	0.0 %	
<u>2001-01-16</u>	666,875		0	0.0 %	
<u>2001-01-17</u>	602,006		0	0.0 %	
<u>2001-01-18</u>	610,448		0	0.0 %	
<u>2001-01-19</u>	517,312		0	0.0 %	
<u>2001-01-20</u>	245,089		0	0.0 %	
<u>2001-01-21</u>	306,169		0	0.0 %	
<u>2001-01-22</u>	695,438		0	0.0 %	
<u>2001-01-23</u>	666,875		0	0.0 %	
<u>2001-01-24</u>	602,006		0	0.0 %	
<u>2001-01-25</u>	610,448		0	0.0 %	
<u>2001-01-26</u>	517,312		0	0.0 %	
<u>2001-01-27</u>	245,089		0	0.0 %	





Sample Inventory Report (drilled down)

Here you can get a detailed report of the inventory for a particular date (of course, with the section parameters you originally specified).

Inventory Report

www.wral.com, depth=all

2000-12-31

Section		Projected Inventory	Inventory Allocated		
www.wral.com – cardshop	468 x 60	192	0	0.0 %	
www.wral.com – consumer	468 x 60	929	0	0.0 %	
www.wral.com – entertainment	468 x 60	1,651	500	30.3 %	
www.wral.com – family	468 x 60	461	0	0.0 %	
www.wral.com – food	468 x 60	675	0	0.0 %	
www.wral.com – health	468 x 60	559	0	0.0 %	
www.wral.com – health (coldsore)	468 x 60	29	0	0.0 %	
www.wral.com – homepage	120 x 90	35,742	0	0.0 %	
www.wral.com – homepage – programtease	120 x 90	45,613	0	0.0 %	
www.wral.com – local news	468 x 60	23,764	4,300	18.1 %	
www.wral.com – local news	120 x 90	2,967	0	0.0 %	
www.wral.com – local news	91 x 60	17,507	0	0.0 %	
www.wral.com – local news – jiffylube spons	468 x 60	43	0	0.0 %	
www.wral.com – news	468 x 60	7,340	1,300	17.7 %	
www.wral.com – real estate	468 x 60	35	0	0.0 %	
www.wral.com – robocam	468 x 60	980	0	0.0 %	
www.wral.com – sports	468 x 60	8,209	1,400	17.1 %	
www.wral.com – sports	120 x 90	2,075	0	0.0 %	

User Interface

www.wral.com – technology	468 x 60	493	0	0.0 %	
www.wral.com – townsquare	468 x 60	1,636	500	30.6 %	
www.wral.com – traffic	468 x 60	10,279	2,000	19.5 %	
www.wral.com – weather	468 x 60	99,162	23,700	23.9 %	
www.wral.com – weather	120 x 90	26,001	0	0.0 %	
www.wral.com – weather – hurricanes	468 x 60	7,017	1,000	14.3 %	
www.wral.com – weather – hurricanes left1	120 x 90	4,103	0	0.0 %	
www.wral.com – weather – hurricanes left2	120 x 90	8,406	0	0.0 %	
www.wral.com – wralmart	468 x 60	301	0	0.0 %	

Sample Campaign Report

Cyberfirst on WRAL

From 2000-08-01 to 2000-08-31

Impressions	Clickthroughs		Imp. Errors		Click Errors	
	Num	Rate	Num	Rate	Num	Rate
1,472,590	2,127	0.14 %	0	0.00 %	0	0.00 %

By Creative

Creative	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
WRALmart	864	0.06 %	15	1.74 %	0	0.00 %	0	0.00 %
consumer	10,162	0.69 %	41	0.40 %	0	0.00 %	0	0.00 %
entertainment	10,051	0.68 %	72	0.72 %	0	0.00 %	0	0.00 %
family	6,457	0.44 %	31	0.48 %	0	0.00 %	0	0.00 %
food	11,146	0.76 %	52	0.47 %	0	0.00 %	0	0.00 %
health	4,829	0.33 %	38	0.79 %	0	0.00 %	0	0.00 %
local_news	187,912	12.76 %	427	0.23 %	0	0.00 %	0	0.00 %
news	85,848	5.83 %	180	0.21 %	0	0.00 %	0	0.00 %
sports	42,878	2.91 %	107	0.25 %	0	0.00 %	0	0.00 %
technology	5,881	0.40 %	23	0.39 %	0	0.00 %	0	0.00 %
traffic	43,584	2.96 %	29	0.07 %	0	0.00 %	0	0.00 %
weather	1,062,978	72.18 %	1,112	0.10 %	0	0.00 %	0	0.00 %

By Date

Date	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
2000-08-01	142,984	9.71 %	192	0.13 %	0	0.00 %	0	0.00 %
2000-08-02	184,715	12.54 %	283	0.15 %	0	0.00 %	0	0.00 %
2000-08-03	207,476	14.09 %	321	0.15 %	0	0.00 %	0	0.00 %
2000-08-04	218,773	14.86 %	330	0.15 %	0	0.00 %	0	0.00 %
2000-08-05	59,572	4.05 %	92	0.15 %	0	0.00 %	0	0.00 %
2000-08-06	54,284	3.69 %	93	0.17 %	0	0.00 %	0	0.00 %
2000-08-07	136,357	9.26 %	248	0.18 %	0	0.00 %	0	0.00 %
2000-08-08	114,313	7.76 %	218	0.19 %	0	0.00 %	0	0.00 %
2000-08-09	143,401	9.74 %	166	0.12 %	0	0.00 %	0	0.00 %
2000-08-10	155,113	10.53 %	126	0.08 %	0	0.00 %	0	0.00 %
2000-08-11	55,602	3.78 %	58	0.10 %	0	0.00 %	0	0.00 %

By Hour

Hour	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
0	27,655	1.88 %	93	0.34 %	0	0.00 %	0	0.00 %
1	23,494	1.60 %	35	0.15 %	0	0.00 %	0	0.00 %

User Interface

2	20,917	1.42 %	21	0.10 %	0	0.00 %	0	0.00 %
3	15,717	1.07 %	45	0.29 %	0	0.00 %	0	0.00 %
4	15,317	1.04 %	7	0.05 %	0	0.00 %	0	0.00 %
5	18,823	1.28 %	17	0.09 %	0	0.00 %	0	0.00 %
6	29,708	2.02 %	33	0.11 %	0	0.00 %	0	0.00 %
7	59,291	4.03 %	71	0.12 %	0	0.00 %	0	0.00 %
8	90,102	6.12 %	108	0.12 %	0	0.00 %	0	0.00 %
9	71,544	4.86 %	93	0.13 %	0	0.00 %	0	0.00 %
10	76,797	5.22 %	129	0.17 %	0	0.00 %	0	0.00 %
11	87,157	5.92 %	111	0.13 %	0	0.00 %	0	0.00 %
12	93,014	6.32 %	163	0.18 %	0	0.00 %	0	0.00 %
13	88,235	5.99 %	157	0.18 %	0	0.00 %	0	0.00 %
14	93,570	6.35 %	160	0.17 %	0	0.00 %	0	0.00 %
15	124,066	8.43 %	163	0.13 %	0	0.00 %	0	0.00 %
16	129,313	8.78 %	212	0.16 %	0	0.00 %	0	0.00 %
17	82,580	5.61 %	82	0.10 %	0	0.00 %	0	0.00 %
18	61,713	4.19 %	91	0.15 %	0	0.00 %	0	0.00 %
19	52,011	3.53 %	70	0.13 %	0	0.00 %	0	0.00 %
20	61,160	4.15 %	74	0.12 %	0	0.00 %	0	0.00 %
21	61,524	4.18 %	85	0.14 %	0	0.00 %	0	0.00 %
22	47,428	3.22 %	47	0.10 %	0	0.00 %	0	0.00 %
23	41,454	2.82 %	60	0.14 %	0	0.00 %	0	0.00 %

By Section

Section	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
www.wral.com – consumer	10,162	0.69 %	41	0.40 %	0	0.00 %	0	0.00 %
www.wral.com – entertainment	10,051	0.68 %	72	0.72 %	0	0.00 %	0	0.00 %
www.wral.com – family	6,457	0.44 %	31	0.48 %	0	0.00 %	0	0.00 %
www.wral.com – food	11,146	0.76 %	52	0.47 %	0	0.00 %	0	0.00 %
www.wral.com – health	4,829	0.33 %	38	0.79 %	0	0.00 %	0	0.00 %
www.wral.com – local news	187,912	12.76 %	427	0.23 %	0	0.00 %	0	0.00 %
www.wral.com – news	85,848	5.83 %	180	0.21 %	0	0.00 %	0	0.00 %
www.wral.com – sports	42,878	2.91 %	107	0.25 %	0	0.00 %	0	0.00 %
www.wral.com – technology	5,881	0.40 %	23	0.39 %	0	0.00 %	0	0.00 %
www.wral.com – traffic	43,584	2.96 %	29	0.07 %	0	0.00 %	0	

User Interface

								0.00 %
www.wral.com – weather	982,761	66.74 %	1,025	0.10 %	0	0.00 %	0	0.00 %
www.wral.com – weather – hurricanes	80,217	5.45 %	87	0.11 %	0	0.00 %	0	0.00 %
www.wral.com – wralmart	864	0.06 %	15	1.74 %	0	0.00 %	0	0.00 %

Sample Section Report

Section: *www.wral.com*

From 2000-08-01 to 2000-08-31

Impressions	Clickthroughs		Imp. Errors		Click Errors	
	Num	Rate	Num	Rate	Num	Rate
6,679,664	12,693	0.19 %	5,460	0.08 %	1,138	8.23 %

By Campaign

Campaign	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
Ad Council Target Test 2	178	0.00 %	0	0.00 %	0	0.00 %	0	0.00 %
Ad Council Target Test 3	250	0.00 %	4	1.60 %	0	0.00 %	0	0.00 %
Alltel Weather Watch	106,344	1.59 %	97	0.09 %	0	0.00 %	0	0.00 %
BellSouth August	124,003	1.86 %	732	0.59 %	0	0.00 %	0	0.00 %
Buyers Advantage Realty	173	0.00 %	1	0.58 %	0	0.00 %	0	0.00 %
Click Carolina	138,318	2.07 %	312	0.23 %	0	0.00 %	0	0.00 %
Cyberfirst on WRAL	1,472,590	22.05 %	2,127	0.14 %	0	0.00 %	0	0.00 %
Festival Rodin	86,154	1.29 %	359	0.42 %	0	0.00 %	0	0.00 %
First Citizens Summer	59,877	0.90 %	181	0.30 %	0	0.00 %	0	0.00 %
Flycast ROS	1,570,312	23.51 %	1,920	0.12 %	0	0.00 %	2	0.10 %
Home Source Power Hurricanes	47,850	0.72 %	422	0.88 %	0	0.00 %	2	0.47 %
House Campaign	275,759	4.13 %	444	0.16 %	0	0.00 %	0	0.00 %
Lowes Food – Traffic Patrol	15,664	0.23 %	25	0.16 %	0	0.00 %	0	0.00 %
Lowry Ophthalmology	55,515	0.83 %	143	0.26 %	0	0.00 %	0	0.00 %
Mann ENT Summer Campaign	61,929	0.93 %	191	0.31 %	0	0.00 %	0	0.00 %
MarieGifts.com Aug.–Sept.	9,706	0.15 %	37	0.38 %	0	0.00 %	0	0.00 %
NC Electric Corp – Hurricanes (banner)	75,748	1.13 %	71	0.09 %	0	0.00 %	0	0.00 %
NC Electric Corp – Hurricanes	111,699	1.67 %	197	0.18 %	0	0.00 %	0	0.00 %

User Interface

(button)						%		%
NCSU CTU on WRAL	3,117	0.05 %	10	0.32 %	0	0.00 %	0	0.00 %
Programming Teases	930,073	13.92 %	2,501	0.27 %	0	0.00 %	6	0.24 %
Purelip affiliate program	92	0.00 %	2	2.17 %	0	0.00 %	0	0.00 %
Shop the Country – Classic TV	827,508	12.39 %	1,162	0.14 %	0	0.00 %	1	0.09 %
Survivor Challenge	30,480	0.46 %	85	0.28 %	0	0.00 %	0	0.00 %
WRAL House	537,573	8.05 %	1,336	0.25 %	0	0.00 %	0	0.00 %
dbusiness.com Trade	138,752	2.08 %	334	0.24 %	0	0.00 %	0	0.00 %

By Creative

Creative	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
3 defenses	92	0.00 %	2	2.17 %	0	0.00 %	0	0.00 %
Alltel Weather Watch	106,344	1.59 %	97	0.09 %	0	0.00 %	0	0.00 %
Animal Cam	35,504	0.53 %	253	0.71 %	0	0.00 %	0	0.00 %
Barnes and Noble	9,439	0.14 %	11	0.12 %	0	0.00 %	0	0.00 %
BellSouth YP	124,003	1.86 %	732	0.59 %	0	0.00 %	0	0.00 %
Buyers Advantage Realty	173	0.00 %	1	0.58 %	0	0.00 %	0	0.00 %
CBS 48 Hours	30,844	0.46 %	93	0.30 %	0	0.00 %	0	0.00 %
CBS 60 Minutes	8,977	0.13 %	16	0.18 %	0	0.00 %	0	0.00 %
CBS 60 Minutes II	10,089	0.15 %	17	0.17 %	0	0.00 %	0	0.00 %
CBS Big Brother	101,214	1.52 %	510	0.50 %	0	0.00 %	0	0.00 %
CBS Family Law	13,417	0.20 %	19	0.14 %	0	0.00 %	0	0.00 %
CBS JAG	15,437	0.23 %	51	0.33 %	0	0.00 %	0	0.00 %
CBS Judging Amy	10,886	0.16 %	29	0.27 %	0	0.00 %	0	0.00 %
CBS Letterman	124,596	1.87 %	256	0.21 %	0	0.00 %	0	0.00 %
CBS Raymond	13,507	0.20 %	14	0.10 %	0	0.00 %	0	0.00 %
CBS Survivor	30,190	0.45 %	379	1.26 %	0	0.00 %	3	0.79 %
CBS Touched By An Angel	10,430	0.16 %	16	0.15 %	0	0.00 %	0	0.00 %
CBS Walker, Texas Ranger	11,471	0.17 %	18	0.16 %	0	0.00 %	0	0.00 %
Cape Light Tapes	35,738	0.54 %	43	0.12 %	0	0.00 %	0	0.00 %
Classic TV	837,006	12.53 %	1,177	0.14 %	0	0.00 %	1	0.08 %
Click Carolina	138,318	2.07 %	312	0.23 %	0	0.00 %	0	0.00 %
Durham Bulls Tickets	9,128	0.14 %	9	0.10 %	0	0.00 %	0	0.00 %
Festival Rodin	86,154	1.29 %	359	0.42 %	0	0.00 %	0	0.00 %
Festival Rodin Store	35,473	0.53 %	59	0.17 %	0	0.00 %	0	0.00 %
Fly Free with CardMiles	14,969	0.22 %	37	0.25 %	0	0.00 %	0	0.00 %
Free Auto Insurance Quote	14,971	0.22 %	43	0.29 %	0	0.00 %	0	0.00 %

User Interface

Free Home Insurance Quote	14,969	0.22 %	60	0.40 %	0	0.00 %	0	0.00 %
GolfServ	9,202	0.14 %	7	0.08 %	0	0.00 %	0	0.00 %
GolfServ 2	9,409	0.14 %	9	0.10 %	0	0.00 %	0	0.00 %
Higher Rate Online CD	14,968	0.22 %	41	0.27 %	0	0.00 %	0	0.00 %
Home Source Power Banner	47,850	0.72 %	422	0.88 %	0	0.00 %	2	0.47 %
InfoSpace	35,114	0.53 %	70	0.20 %	0	0.00 %	0	0.00 %
Live Webcasts	9,312	0.14 %	9	0.10 %	0	0.00 %	0	0.00 %
Lowes Food to Go	15,664	0.23 %	25	0.16 %	0	0.00 %	0	0.00 %
Lowry Eye (Fuzzy)	55,515	0.83 %	143	0.26 %	0	0.00 %	0	0.00 %
MarieGifts 1	9,706	0.15 %	37	0.38 %	0	0.00 %	0	0.00 %
Mortgage Quotes	9,227	0.14 %	10	0.11 %	0	0.00 %	0	0.00 %
NCNeighbors.com	9,329	0.14 %	9	0.10 %	0	0.00 %	0	0.00 %
NCSU CTU	3,117	0.05 %	10	0.32 %	0	0.00 %	0	0.00 %
On-Time Traffic	9,198	0.14 %	5	0.05 %	0	0.00 %	0	0.00 %
On-Time Traffic2	35,278	0.53 %	52	0.15 %	0	0.00 %	0	0.00 %
Online Sales	9,319	0.14 %	10	0.11 %	0	0.00 %	0	0.00 %
Project Rebuild	35,659	0.53 %	51	0.14 %	0	0.00 %	0	0.00 %
Restaurant Ratings	35,542	0.53 %	128	0.36 %	0	0.00 %	0	0.00 %
The Personal Touch	61,929	0.93 %	191	0.31 %	0	0.00 %	0	0.00 %
The Spin Cycle	30,480	0.46 %	85	0.28 %	0	0.00 %	0	0.00 %
Touchstone Energy	187,447	2.81 %	268	0.14 %	0	0.00 %	0	0.00 %
Upon This Rock	35,209	0.53 %	68	0.19 %	0	0.00 %	0	0.00 %
Virtual Station Tour	36,032	0.54 %	246	0.68 %	0	0.00 %	0	0.00 %
WRAL 5 On Your Side	118,615	1.78 %	359	0.30 %	0	0.00 %	1	0.28 %
WRAL Health Team	114,204	1.71 %	213	0.19 %	0	0.00 %	2	0.93 %
WRAL OnTime Traffic	143,363	2.15 %	168	0.12 %	0	0.00 %	0	0.00 %
WRAL Traffic-Weather	86,538	1.30 %	169	0.20 %	0	0.00 %	0	0.00 %
WRAL Weather-Traffic	86,295	1.29 %	174	0.20 %	0	0.00 %	0	0.00 %
WRAL Wireless Edition	9,235	0.14 %	8	0.09 %	0	0.00 %	0	0.00 %
WRAL Wireless Small	35,253	0.53 %	62	0.18 %	0	0.00 %	0	0.00 %
WRALmart	864	0.01 %	15	1.74 %	0	0.00 %	0	0.00 %
Weather Net	35,281	0.53 %	133	0.38 %	0	0.00 %	0	0.00 %
bulls store	29,572	0.44 %	34	0.11 %	0	0.00 %	0	0.00 %
consumer	10,162	0.15 %	41	0.40 %	0	0.00 %	0	0.00 %
dbusiness.com Trade	138,752	2.08 %	334	0.24 %	0	0.00 %	0	0.00 %
entertainment	10,051	0.15 %	72	0.72 %	0	0.00 %	0	0.00 %
family	6,457	0.10 %	31	0.48 %	0	0.00 %	0	0.00 %
flycast1	1,570,312	23.51 %	1,920	0.12 %	0	0.00 %	2	0.10 %
food	11,146	0.17 %	52	0.47 %	0	0.00 %	0	0.00 %
health	4,829	0.07 %	38	0.79 %	0	0.00 %	0	0.00 %
iHigh Large	9,376	0.14 %	14	0.15 %	0	0.00 %	0	0.00 %
iHigh Small	35,818	0.54 %	55	0.15 %	0	0.00 %	0	0.00 %
infospace	157,772	2.36 %	334	0.21 %	0	0.00 %	0	0.00 %
local_news	187,912	2.81 %	427	0.23 %	0	0.00 %	0	0.00 %
math	178	0.00 %	0	0.00 %	0	0.00 %	0	0.00 %
news	85,848	1.29 %	180	0.21 %	0	0.00 %	0	0.00 %

User Interface

online sales	29,469	0.44 %	17	0.06 %	0	0.00 %	0	0.00 %
ontime traffic	29,607	0.44 %	24	0.08 %	0	0.00 %	0	0.00 %
smokey	250	0.00 %	4	1.60 %	0	0.00 %	0	0.00 %
sports	42,878	0.64 %	107	0.25 %	0	0.00 %	0	0.00 %
technology	5,881	0.09 %	23	0.39 %	0	0.00 %	0	0.00 %
traffic	43,584	0.65 %	29	0.07 %	0	0.00 %	0	0.00 %
weather	1,062,978	15.91 %	1,112	0.10 %	0	0.00 %	0	0.00 %
wireless	29,339	0.44 %	35	0.12 %	0	0.00 %	0	0.00 %

By Date

Date	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
2000-08-01	699,418	10.47 %	1,062	0.15 %	2,581	0.37 %	58	5.18 %
2000-08-02	778,477	11.65 %	1,510	0.19 %	0	0.00 %	149	8.98 %
2000-08-03	846,863	12.68 %	1,613	0.19 %	0	0.00 %	101	5.89 %
2000-08-04	847,254	12.68 %	1,487	0.18 %	0	0.00 %	84	5.35 %
2000-08-05	297,402	4.45 %	695	0.23 %	0	0.00 %	60	7.95 %
2000-08-06	297,217	4.45 %	620	0.21 %	12	0.00 %	170	21.52 %
2000-08-07	644,214	9.64 %	1,386	0.22 %	0	0.00 %	96	6.48 %
2000-08-08	573,119	8.58 %	1,210	0.21 %	0	0.00 %	89	6.85 %
2000-08-09	700,430	10.49 %	1,436	0.21 %	5	0.00 %	118	7.59 %
2000-08-10	726,956	10.88 %	1,234	0.17 %	2,862	0.39 %	120	8.86 %
2000-08-11	268,314	4.02 %	440	0.16 %	0	0.00 %	93	17.45 %

By Hour

Hour	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
0	105,846	1.58 %	730	0.69 %	0	0.00 %	170	18.89 %
1	84,443	1.26 %	171	0.20 %	0	0.00 %	62	26.61 %
2	74,235	1.11 %	90	0.12 %	0	0.00 %	17	15.89 %
3	56,660	0.85 %	146	0.26 %	0	0.00 %	40	21.51 %
4	57,299	0.86 %	68	0.12 %	0	0.00 %	10	12.82 %
5	76,414	1.14 %	76	0.10 %	0	0.00 %	4	5.00 %
6	132,820	1.99 %	180	0.14 %	0	0.00 %	16	8.16 %
7	284,721	4.26 %	385	0.14 %	0	0.00 %	31	7.45 %
8	445,686	6.67 %	954	0.21 %	0	0.00 %	54	5.36 %
9	362,246	5.42 %	647	0.18 %	0	0.00 %	61	8.62 %
10	375,892	5.63 %	684	0.18 %	2,862	0.76 %	87	11.28 %
11	424,113	6.35 %	758	0.18 %	0	0.00 %	125	14.16 %
12	478,532	7.16 %	976	0.20 %	2,195	0.46 %	64	6.15 %
13	461,648	6.91 %	908	0.20 %	104	0.02 %	50	5.22 %
14	479,962	7.19 %	931	0.19 %	93	0.02 %	46	4.71 %
15	606,083	9.07 %	1,057	0.17 %	146	0.02 %	64	5.71 %
16	557,121	8.34 %	1,441	0.26 %	44	0.01 %	69	4.57 %

User Interface

17	345,723	5.18 %	536	0.16 %	4	0.00 %	34	5.96 %
18	245,901	3.68 %	361	0.15 %	0	0.00 %	16	4.24 %
19	207,046	3.10 %	329	0.16 %	0	0.00 %	16	4.64 %
20	231,337	3.46 %	360	0.16 %	12	0.01 %	6	1.64 %
21	242,251	3.63 %	388	0.16 %	0	0.00 %	14	3.48 %
22	199,402	2.99 %	286	0.14 %	0	0.00 %	16	5.30 %
23	144,283	2.16 %	231	0.16 %	0	0.00 %	66	22.22 %

By Section

Section	Impressions		Clickthroughs		Imp. Errors		Click Errors	
	Num	Perc	Num	Rate	Num	Rate	Num	Rate
www.wral.com	6,152	0.09 %	12	0.20 %	0	0.00 %	2	14.29 %
www.wral.com – consumer	27,840	0.42 %	157	0.56 %	4	0.01 %	50	24.15 %
www.wral.com – entertainment	28,567	0.43 %	256	0.90 %	8	0.03 %	47	15.51 %
www.wral.com – family	17,358	0.26 %	161	0.93 %	3	0.02 %	32	16.58 %
www.wral.com – food	31,782	0.48 %	196	0.62 %	10	0.03 %	26	11.71 %
www.wral.com – health	13,060	0.20 %	128	0.98 %	4	0.03 %	29	18.47 %
www.wral.com – health (coldsore)	92	0.00 %	2	2.17 %	4	4.17 %	1	33.33 %
www.wral.com – homepage	1,158,615	17.35 %	2,278	0.20 %	2,809	0.24 %	118	4.92 %
www.wral.com – homepage – programtease	930,073	13.92 %	2,501	0.27 %	440	0.05 %	53	2.08 %
www.wral.com – local news	613,552	9.19 %	1,451	0.24 %	508	0.08 %	193	11.74 %
www.wral.com – news	235,413	3.52 %	536	0.23 %	142	0.06 %	94	14.92 %
www.wral.com – real estate	173	0.00 %	1	0.58 %	0	0.00 %	0	0.00 %
www.wral.com – robocam	16,843	0.25 %	119	0.71 %	27	0.16 %	9	7.03 %
www.wral.com – sports	147,280	2.20 %	398	0.27 %	178	0.12 %	57	12.53 %
www.wral.com – technology	16,100	0.24 %	118	0.73 %	12	0.07 %	52	30.59 %
www.wral.com – townsquare	33,709	0.50 %	209	0.62 %	5	0.01 %	45	17.72 %
www.wral.com – traffic	134,762	2.02 %	204	0.15 %	10	0.01 %	25	10.92 %
www.wral.com – weather	2,817,792	42.18 %	2,787	0.10 %	821	0.03 %	202	6.76 %

User Interface

		%				%		
www.wral.com – weather – hurricanes	200,190	3.00 %	277	0.14 %	148	0.07 %	24	7.97 %
www.wral.com – weather – hurricanes left1	111,699	1.67 %	197	0.18 %	156	0.14 %	23	10.45 %
www.wral.com – weather – hurricanes left2	136,146	2.04 %	623	0.46 %	169	0.12 %	32	4.89 %
www.wral.com – wralmart	2,466	0.04 %	82	3.33 %	2	0.08 %	24	22.64 %

Invoicing

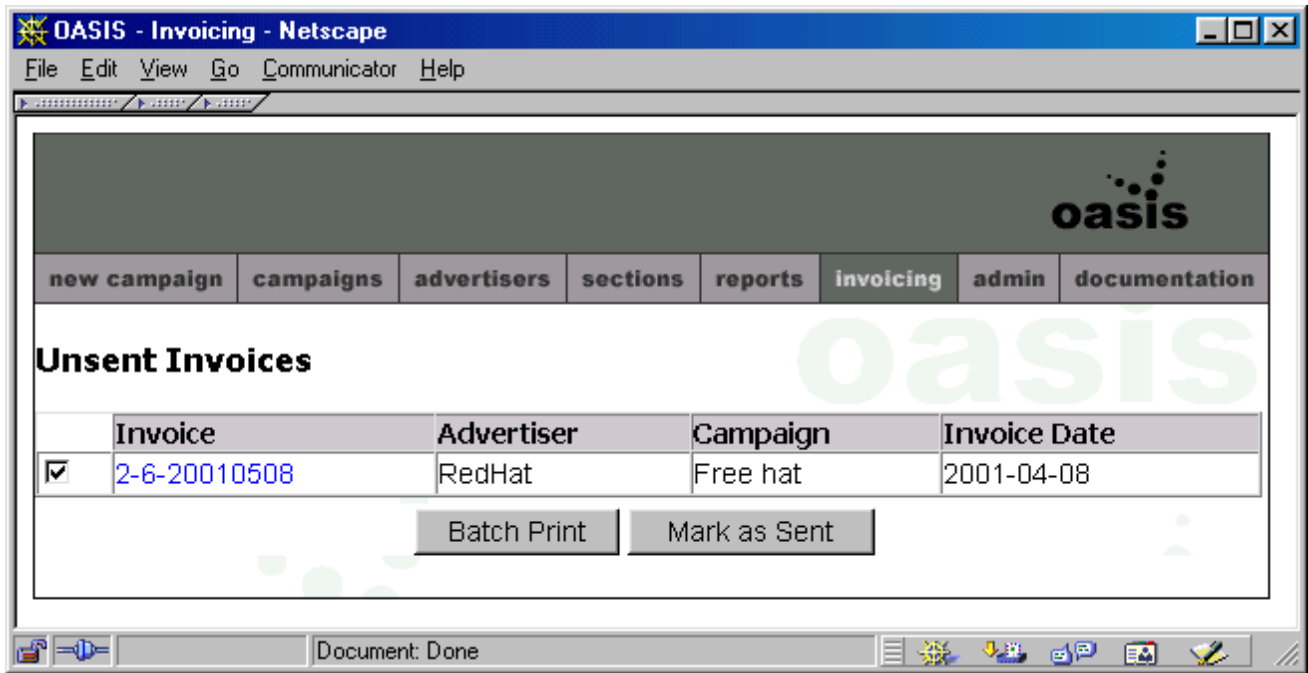
An invoice is a sort of snapshot of campaign activity for a specified period (OASIS sort of assumes that you will invoice advertisers on a monthly basis, but you don't have to do it this way). The invoice records the number of impressions and clickthroughs delivered during the invoice period. It also stores the charges associated with those deliveries as well as the fixed-cost charges.

Invoices can be marked as "sent" or "unsent", and they can be marked as "paid" and "unpaid" to facilitate tracking payments.

For convenience, you can easily batch print groups of invoices. OASIS will use `htmldoc` (your administrator *did* install it, right?) to convert the invoices from HTML to PDF for one-step printing.

The first step is to generate invoices. Enter the beginning and end of the invoicing period and click "Generate Invoices". Any campaigns which have already been invoiced for *any portion* of this billing period will not get new invoices. It is imperative that your billing periods are consistent and do not overlap at all, or you may have a disaster on your hands as invoices are not generated properly for all campaigns.

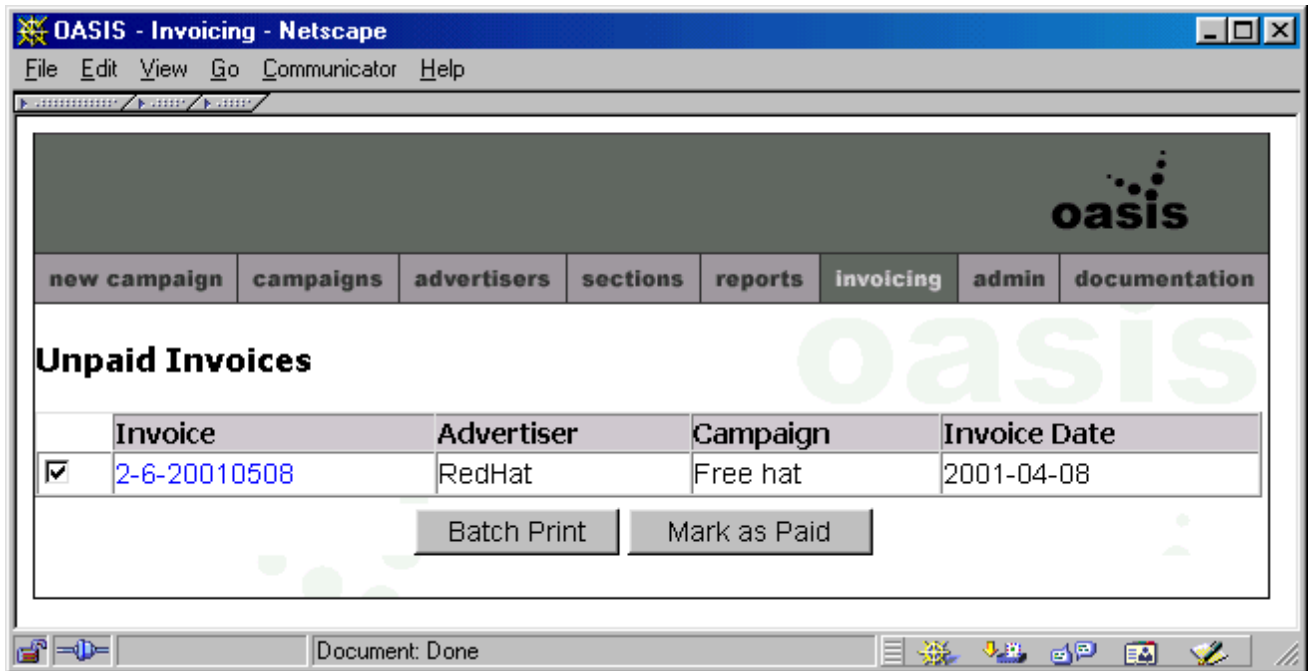
You will see a list of all of the invoices that are generated. To print these out, or to batch print them, click on "Back to the main invoicing menu" to go back to the main invoicing menu.



You can view all unsent invoices. Click on an invoice number to view it and/or print it.

Clicking "Batch Print" will generate a PDF of all checked invoices.

Clicking "Mark as Sent" will mark all checked invoices as sent. At this point, you'd have to go to the "View unpaid invoices" to see them again.



You can view all unpaid invoices. Click on an invoice number to view it and/or print it.

Clicking "Batch Print" will generate a PDF of all checked invoices.

User Interface

Clicking "Mark as Paid" will mark all checked invoices as paid. At this point, only an administrator would be able to access the invoices (and then only by digging through the database).

Sample Invoice



Internet Advertising Invoice

Invoice Number:	6-4-20000831
Invoice Date:	August 01, 2000
Terms:	Net 30 Days
Due Date:	August 31, 2000

Bill To: Ad Council
Washington, DC

Campaign: Ad Council
Ongoing

Start Date:

End Date:

Sched. Impressions: 0

CPM: \$ 5.00

Ads Delivered

Period: July 01, 2000 to July 31, 2000

Impressions Delivered: 4,156 x \$ 5.00 / 1000 = \$ 20.78

Actual Gross Billing: \$ 20.78

Net Due Amount: \$ 20.78

Campaign Detail

Date	Impressions Delivered	Clickthroughs	CT Rate
2000-07-12	34	0	0.00
2000-07-13	22	2	9.09
2000-07-14	3	0	0.00
2000-07-15	12	0	0.00
2000-07-17	105	4	3.81
2000-07-18	1	0	0.00
2000-07-20	387	1	0.26
2000-07-21	1,045	1	0.10
2000-07-22	392	0	0.00
2000-07-23	507	1	0.20
2000-07-24	1,128	2	0.18
2000-07-25	520	0	0.00

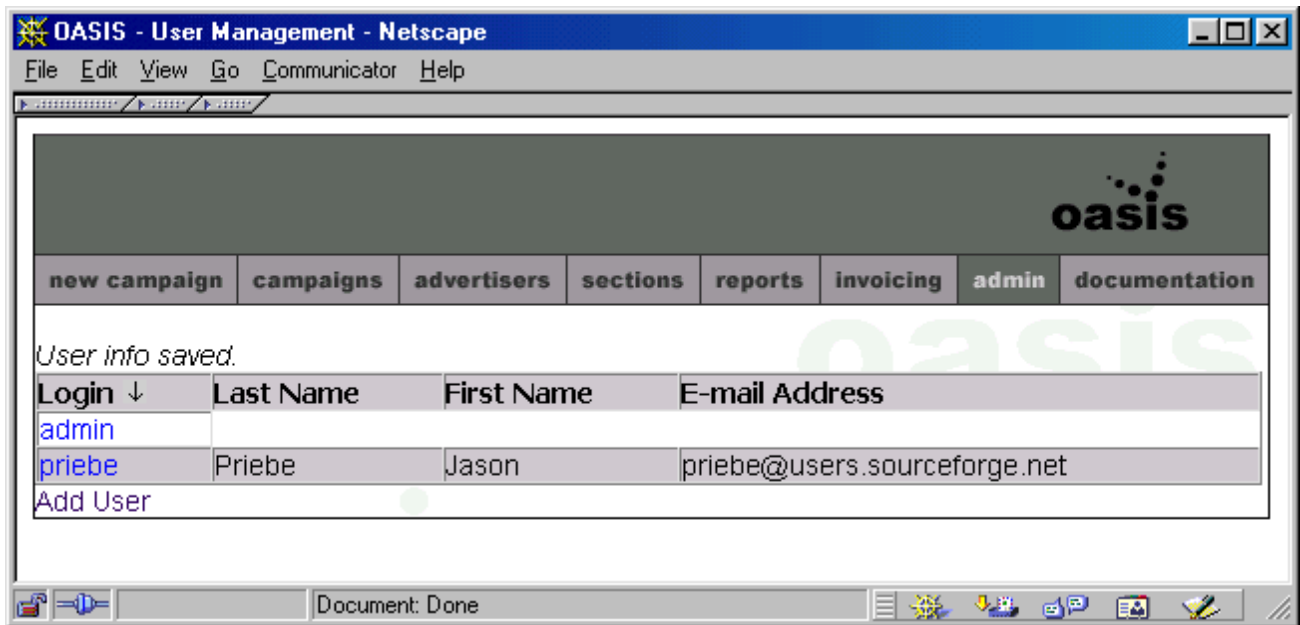
Net due amount must be received by invoice due date. Please make checks payable to WRAL-TV5. Remit to WRAL-TV Accounting Dept.; PO Box 60904; Charlotte, NC 28260. For billing questions, call Denise Quick at (919) 821-8514.

Admin

From the admin page, you can perform a lot of high-level actions. For this reason, it is best if access to this section is restricted to experienced users only.

User Management

Use this interface to control who can access the OASIS interface and which parts of the interface the users are able to use.



Here you see a listing of all active users in the system. To add a new user, click "Add User". To edit an existing user, click on the user's login.

OASIS - User Management - Netscape

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User Details

Login: priebe

Password: *****

First Name: Jason

Last Name: Priebe

E-mail Address: priebe@users.sourceforge.net

Permissions:

- Admin
- Advertisers
- Campaigns
- CampaignInsertion
- LimitedCampaigns
- Invoicing
- Reports
- Sections

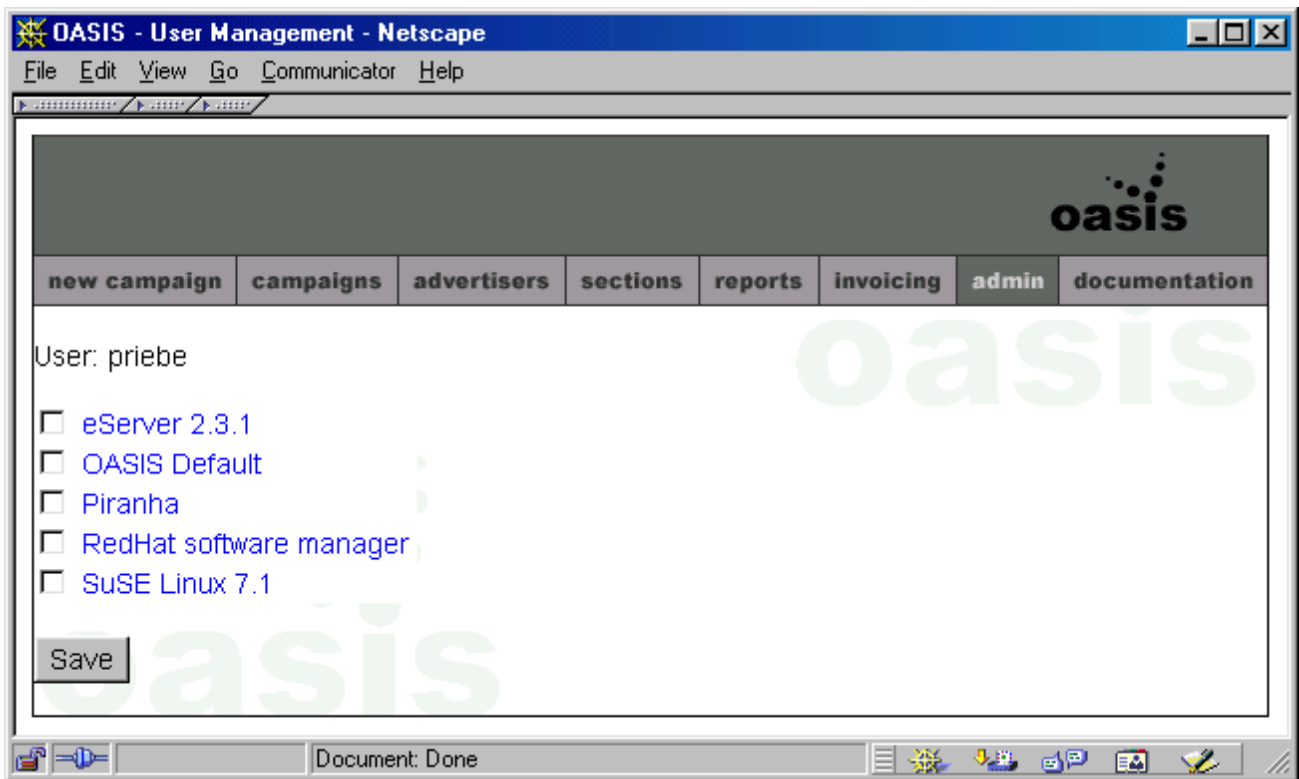
Save Delete

[Edit Limited Campaign Access](#)

Document: Done

The user editing form is fairly simple to use. Login and password are required. The other fields are optional. Select the permissions that you want to grant to the user. Hit "Save" to save your changes.

If you grant a user "LimitedCampaigns" access, you can indicate which campaigns the user is allowed to access with the "Edit Limited Campaign Access" link:



Users who have LimitedCampaigns access will see the "Campaigns" link at the top of their interface, but when they click on it, they will only see the campaigns to which you have specifically granted access. Also, the interface will be somewhat limited (they will not be able to modify section assignments for campaigns and creatives).

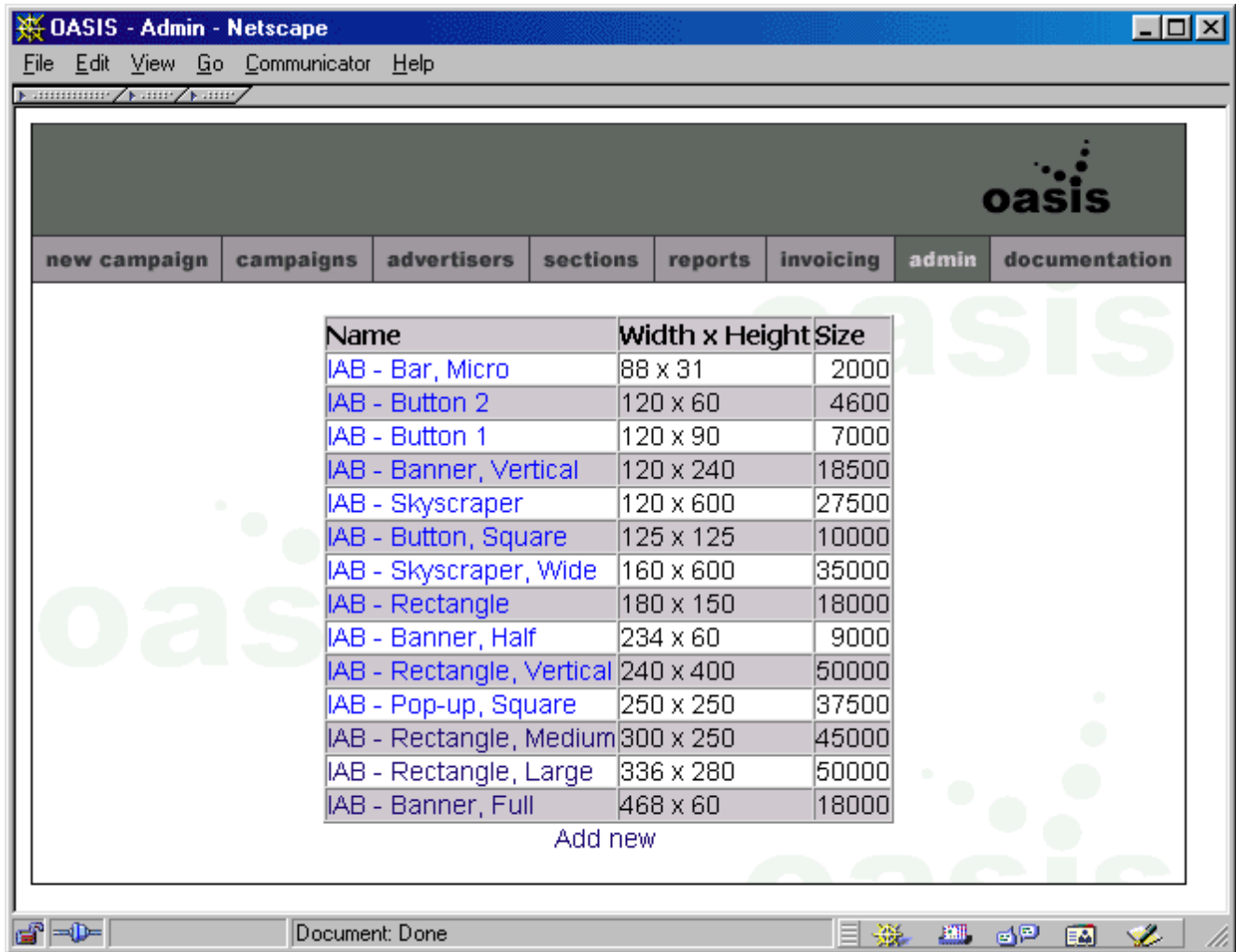
Note that granting "Campaigns" access overrides "LimitedCampaigns" access.

If you change your own password, the next link you follow within the OASIS interface will require you to enter the new password.

If you hit "Delete" to delete a user, you'll be asked to confirm this action. Follow the onscreen instructions to delete the user.

Maximum Creative Sizes

With this interface, you can control the size of uploaded creatives. For each dimension of creatives your site will serve (for example, 468 x 60), you define the maximum size in bytes for creatives of that dimension. Any time somebody tries to upload a creative larger than this maximum, it will be rejected. There is no override, short of temporarily changing the maximum using this interface.



Here you see a list of all existing maximums. Click on "Add new" to set a new maximum. Click on the dimensions to redefine a maximum.

The screenshot shows a Netscape browser window titled "OASIS - Admin - Netscape". The address bar is empty. The menu bar includes "File", "Edit", "View", "Go", "Communicator", and "Help". The main content area has a dark header with the "oasis" logo. Below the header is a navigation bar with tabs: "new campaign", "campaigns", "advertisers", "sections", "reports", "invoicing", "admin", and "documentation". The "new campaign" tab is selected. The form contains the following fields and buttons:

Name	<input type="text" value="IAB - Banner, Full"/>	
Width		468
Height		60
Size	<input type="text" value="18000"/>	
<input type="button" value="Save"/> <input type="button" value="Delete"/>		

The status bar at the bottom shows "Document: Done" and various icons.

You cannot edit the width and height once you've defined a maximum. You can, however, delete a maximum and define a new one. To change the maximum, enter the new size, and hit "Save".

Traffic Shaping

OASIS - Admin - Netscape

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Traffic Shaping

Hour	Pageviews	Hour	Pageviews
0	100	12	100
1	100	13	100
2	100	14	100
3	100	15	100
4	100	16	100
5	100	17	100
6	100	18	100
7	100	19	100
8	100	20	100
9	100	21	100
10	100	22	100
11	100	23	100

Save

Document: Done

For each hour of the day, enter a value indicating the approximate number of pageviews your site does during that hour. These numbers are not used in an absolute fashion; rather, they are used simply to compute the percentage of traffic at each hour of the day for optimal scheduling.

Hit "Save" to save your changes.

View Admin Log

This provides a convenient way to view today's administrative log, which contains a lot of valuable information about how OASIS is scheduling your campaigns and creatives.

Delivery Engine Internals

Hourly Assignments

With this page, you can look at exactly which creatives are assigned to which sections on your site. This is the Hourly Assignments shared memory segment that is loaded by the hourly maintenance script.

The "overflow" link will show you what is assigned for the the overflow period at the top of each hour when the next hour's assignments are computed. If nothing appears in these tables, or if any sections do not have assignments, you may want to consider adding campaigns/creatives with no impression targets and with "Overflow OK" checked.

The left-hand column displays the section names (along with links to the Section management interface for each section). The right hand column shows, for each creative dimension, an array of the creatives assigned to the section.

OASIS - Admin - Netscape

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Hourly Assignments

Section	Creatives
OASIS Server	468x60: 1 2
Co-branded Sites	468x60: 1 2
rsub.google.com	468x60: 1 2
rsub.google.com	468x60: 1 2
Local Sites	468x60: 1 2
bunkol	468x60: 1 2
disinformation	260x65: 5 4 3 468x60: 1 2
activism	260x65: 5 4 3 468x60: 1 2
aliens	260x65: 5 4 3 468x60: 1 2
conspiracies	260x65: 5 4 3 468x60: 1 2
drugs	260x65: 5 4 3 468x60: 1 2
entertainment	260x65: 5 4 3 468x60: 1 2
government	260x65: 5 4 3 468x60: 1 2
history	260x65: 5 4 3 468x60: 1 2
human rights	260x65: 5 4 3 468x60: 1 2
media	260x65: 5 4 3 468x60: 1 2
mind control	260x65: 5 4 3 468x60: 1 2

Document: Done

Daily/Hourly Targets

This table combines data from two sources, the DailyTarget table and the Hourly Targets shared memory segment. For each creative which is being scheduled today, you'll see the Target, Weight, and Remaining counts.

The "overflow" link will show you info on the creatives available during the overflow period at the top of each hour when the next hour's assignments are computed. These values will only change during the overflow period, which may be very short (on the order of 1 or 2 seconds), depending on the number of campaigns and sections on your site.

On the right-hand side of the table, you see the corresponding entries in the Hourly Targets shared memory. Notice that if you reload this page, you may see changes in the right-hand side. This is a live look into the delivery engine's internals.

OASIS - Admin - Netscape

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Targets

Campaign/Creative	Daily			Hourly			Clicks	Type
	Target	Weight	Remaining	Target	Weight	Remaining		
Free hat / Free Hat 1	40000	10	40000	5715	10	5715	0	Image
chickenhead standard / strumpets	5953	10	5953	851	10	833	0	Image
chickenhead standard / army	5953	10	5953	851	10	837	0	Image
chickenhead standard / embezzlement	5953	10	5953	851	10	833	0	Image
OASIS Default / OASIS Default 1	0	1000	0	0	1000	0	0	Image

Impressions today: 50
 Impressions this hour: 50
 Clicks this hour: 0 (0.00 %)

Shared memory used: 315 B / 50,000 B (0.6 %)

Document: Done

Creative Content

This table displays the Creative Content shared memory segment. For each creative active this hour, you see the creative's name, the content (using `creative_preview.php` to display the contents of locally-served creatives), whether the ad is a third-party redirection, the MIME type, and whether the creative is animated.

You can click on any of the banners to get the full-size version.

Creative Clickthrough

This table displays the Creative Clickthrough shared memory segment. For each creative active this hour, you see the creative's name, and the clickthrough URL for that creative.

Note that for display purposes, the clickthrough URLs have been broken up to wrap better, so don't try to copy and paste them. However, the URLs are hyperlinked with the unmodified URL, so you can get the URL that way if you need it.

Delivery Table

In a live server, the Delivery table may be too big for practical viewing. In general, you can get a lot of valuable information just from the stats. The stats link will tell you how big the Delivery table is (how many bytes it occupies in RAM), the number of rows, the number of unique IDs, and the number of IP addresses in the table.

If you opt to view the entire table, then you will see, for each user ID (or IP), the most recently viewed creative for each section/dimension combination. You will also see when the creative was viewed.

The screenshot shows the OASIS Admin interface in a Netscape browser window. The title bar reads "OASIS - Admin - Netscape". The menu bar includes "File", "Edit", "View", "Go", "Communicator", and "Help". The address bar shows a URL starting with "http://". The main content area has a header with the "oasis" logo and a navigation bar with links: "new campaign", "campaigns", "advertisers", "sections", "reports", "invoicing", "admin", and "documentation". Below the navigation bar, the "Delivery Table" section is displayed. It shows statistics: "Table Size: 129,060 (data) + 129,032 (index) = 258,092", "Rows: 4", "Unique IDs: 1", and "Unique IPs: 1". There are two tables. The first table has columns "Section", "ID Count", and "IP Count". The second table has columns "Unique ID", "Section", "WxH", "CreativeID", and "Last Seen". The third table has columns "IP Address", "Section", "WxH", "CreativeID", and "Last Seen".

Section	ID Count	IP Count
disinformation	1	1
disinformation: activism	1	1

Unique ID	Section	WxH	CreativeID	Last Seen
3ab943b95b99d	6	260x65	5	04/06/2001 17:50:05
	10	260x65	5	04/06/2001 17:50:05

IP Address	Section	WxH	CreativeID	Last Seen
216.77.243.168	6	260x65	5	04/06/2001 17:50:05
	10	260x65	5	04/06/2001 17:50:05

Reload Delivery Engine

This is an option that you will hopefully never have to use. It will force OASIS to recalculate all the section assignments and the hourly targets. Normally, if you add a new campaign (or change a campaign's status, impression goals, weights, etc.), the changes will show up in the Hourly Targets shared memory at the top of the next hour. If you absolutely can't wait until then, you can force OASIS to rebuild these shared memory segments immediately.

There are a couple of disadvantages to doing this. One is that the delivery of ads will pause while these shared memory segments are reloaded (usually not more than a second or two, though). To understand the second drawback, you have to understand how OASIS schedules campaigns. At the top of every hour, all campaigns with non-zero impression targets are given top priority until they meet their hourly targets. Then they stop delivering, and all campaigns with impression targets values of zero will run (in accordance to their relative weights). If you force a reload of the delivery engine, you will reset this process, and the non-zero campaigns will run again. They still will not exceed their daily targets, but if smooth delivery throughout the day is critical, you will not want to reload the delivery engine.

There is no confirmation required for this link — if you click it, the delivery engine is immediately reloaded.

Preferences

new campaign	campaigns	advertisers	sections	reports	invoicing	admin	documentation
oasis							
AdminEmail	<input type="text" value="webmaster"/>						
ClickthroughWindow	<input type="text" value="7200"/>						
CurlPath	<input type="text" value="/usr/local/bin/curl"/>						
GzipPath	<input type="text" value="/bin/gzip"/>						
HtmlDocPath	<input type="text" value="/usr/local/bin/htmlDoc"/>						
IdentifyPath	<input type="text" value="/usr/bin/identify"/>						
InsertActive	<input type="text" value="N"/>						

The preferences interface is fairly primitive. A full text box is provided for every preference, regardless of what types of values the software expects to find for these preferences. Be careful — for fields that expect numbers, be sure you enter a number; for fields that expect "Y" or "N", be sure to enter one of these letters.

Following is a rundown of the preferences and their meanings.

AdminEmail

The e-mail address of the administrator. Used by `daily_maint.php` to send campaign underdelivery

warnings. Default: `webmaster`.

ClickthroughWindow

The amount of time, in seconds, that entries can remain in the Delivery table. If an entry is deleted between the time an ad is shown to a user and the time he clicks on it, the clickthrough will result in an error. You don't want this value too small for that reason. However, you might not want it too big, either, as your Delivery table's memory consumption will grow. Default: `7200`.

CurlPath

The path to `curl` (used to retrieve remote URLs). PHP has some built-in mechanisms for retrieving URLs, but they don't work with redirection, which of course, is a common technique used in ad serving. If you install `curl`, enter the path to it here. If not, OASIS will use PHP's built-in HTTP code, but be warned that it may not work. Default: `/usr/local/bin/curl`.

GzipPath

The path to `gzip` (used to compress the archived log files). Default: `/bin/gzip`.

HtmldocPath

The path to `htmldoc`, the program that converts HTML invoices into PDF for batch printing. Default: `/usr/bin/htmldoc`.

IdentifyPath

The full path to `identify`, the ImageMagick tool used to determine image dimensions, type, animation, etc. Default: `/usr/X11R6/bin/identify`.

InsertActive

Should campaigns added with the New Campaign interface be active? If this is set to "Y", they will be active, and no e-mail will be sent. If it is set to "N", campaigns will be added with a status of "Inactive", and e-mail will be sent to NewCampaignEmail to have an administrator make the campaign live. Default: `N`.

InvCycle

What kind of cycle does the daily traffic on your site follow? Your choices are "Day", "Week", "Month", and "Year". Note that your site's traffic may follow a daily cycle in its hourly traffic, but it may have a weekly cycle in its daily traffic. We're only interested in how the daily numbers vary.

If you set this to "Week", your predicted Monday traffic will be calculated based on historical data from Mondays. Tuesday traffic will be based on Tuesdays, and so on. If you set this to "Month", the 1st of the month will be calculated based on past 1sts. The same idea applies to "Year". If you set it to "Day", all days are treated the same.

Note that if you set this to "Week", it will take 7 days for you to have enough data to project future inventory. If you set it to "Month", it will take 30 days to project future inventory, and if you set it to "Year" — you guessed it — it will take 365 days to project future inventory. Default: `Week`.

InvDaysBack

How many days back should OASIS go to project future inventory? Default: `90`.

InvDaysForward

How many days out should OASIS project future inventory? Default: `60`.

InvMethod

What method should be used to project traffic? Currently, you can only set this to "Average". Default: Average.

InvoiceFooterString

The string (may be a long block of text) which will appear at the bottom of every invoice. No default.

Invoice Due

Number of days after which invoices must be paid. This is added to the InvoiceDate. Default: 30.

InvoiceHeaderGraphic

The name of the graphic file to be inserted at the top of every invoice. This file must reside in the `mgmt` directory in order for `htmldoc` to build PDF files for batch printing. If you don't care about this feature, you could conceivably use a URL instead of a local file name. No default.

InvoiceHeaderString

The short text label at the top of every invoice. Default: Internet Advertising Invoice.

InvScaleFactor

The delivery simulation used to predict inventory availability is very time-consuming. To speed it up, you can use this scale factor to simulate a fraction of the traffic. For example, if the traffic projection says you have 10,000 available impressions, and you have two campaigns each scheduled for 5,000 impressions, rather than simulating all 10,000 impressions, you could simulate 1,000 impressions with two campaigns of 500 impressions each.

The smaller you set this value, the faster your simulation will run, but the less accurate it will be. Default: 0.5.

InvWarningThreshold

As the delivery simulation runs, it looks for section/day combinations where the allocated impressions seem high. This value determines what is considered "high". It represents a percentage of allocated impressions. For any day in the simulation, if any section's allocated impressions exceeds this value, a warning will be e-mailed to the administrator. Default: 80.

KeepLogsFor

For how many days should we keep OASIS delivery logs? These files are quite large, and they're really not important unless you're trying to diagnose a problem with the server. Default: 14

KeepStatsFor

For how many days should we keep OASIS stats? You want to keep these around for a pretty long time so that you can run reports, but you want to keep an eye on the size of the HourlyStats table. It gets pretty big. Default: 800

LogDir

The directory in which log files are written by the delivery engine. This should be on as fast a disk as possible, but one with a decent amount of storage, as log files are archived under this directory. Default: `/usr/local/oasis/logs`.

NewCampaignEmail

The e-mail address to which the system sends notifications of campaigns being added via the "New Campaign" interface (presumably, this interface is used by non-techies — you may wish to know

whenever they enter campaigns so that you can verify them before they go live). Default: `webmaster`.

OASISRoot

The URL to the OASIS directory. Used to construct sample tags in the section management interface, and used to e-mail the URL to the address specified in `NewCampaignEmail`. No default.

ReportFromAddr

The e-mail address to be used when sending weekly reports to advertisers. It may include a "friendly form". For example: "OASIS Professional Services ". This value *must* be specified, or reports may not get mailed at all. No default.

RevenueReportClicks

Should clicks and CPCs be included on the revenue report? If you don't sell campaigns based on CPC, then these columns will be superfluous on the revenue reports. Set this to "N" to suppress the columns, and to "Y" to display them. Default: `Y`.

ShmSizeCreativeContent

Size (in bytes) of the shared memory segment containing the creative content for the server. See the [shared memory](#) section for information on how to tune this value. Default: `5,000,000`.

ShmSizeCreativeClickthroughs

Size (in bytes) of the shared memory segment containing the creative clickthroughs for the server. See the [shared memory](#) section for information on how to tune this value. Default: `500,000`.

ShmSizeHourlyAssignments

Size (in bytes) of the shared memory segment containing the hourly creative assignments for each section. See the [shared memory](#) section for information on how to tune this value. Default: `5,000,000`.

ShmSizeHourlyTargets

Size (in bytes) of the shared memory segment containing the hourly targets for each creative. See the [shared memory](#) section for information on how to tune this value. Default: `50,000`.

ValidateClickthrough

Should clickthrough URLs be validated when inserting creatives? If set to "N" (not recommended, but you may have situations where the URLs simply cannot be retrieved by PHP), the system will not check the clickthrough URLs. Default: `Y`.

ValidateThirdParty

Should third party creative URLs be validated when inserting creatives? If set to "N" (not recommended, but you may have situations where the URLs simply cannot be retrieved by PHP), the system will not check the URLs.

Note: the Campaign Insertion interface requires that third party creatives be retrieved so that their dimensions can be obtained. This preference setting has no effect on the Campaign Insertion interface.

Default: `Y`.

Adding OASIS Ads to Your Site's Pages

Method 1: IMG Tagging

The simplest way to incorporate OASIS banners on your site is to use IMG tagging. In this scenario, your OASIS server can be a standalone server separate from your Web server. The drawback is that you don't get to use ALT tags, and you can't serve rich media. In addition, you have to use cookies to record what banner a user last saw. This can be somewhat unreliable and can lead to erroneous clickthroughs.

In the pages of your Web site, you add tags like this:

```
<A HREF="http://oasis.yourdomain.com/oasisc.php?s=35&w=468&h=60"><IMG  
SRC="http://oasis.yourdomain.com/oasisi.php?s=35&w=468&h=60" WIDTH=468  
HEIGHT=60 BORDER=0></A>
```

There are two components, the impression URL and the clickthrough URL. The impression URL is `/oasisi.php` (on your OASIS server), and the clickthrough URL is `/oasisc.php` (also on your OASIS server).

Each takes three CGI arguments:

- `s`: the section number to which this page belongs
- `w`: the width of the banner to be displayed here
- `h`: the height of the banner to be displayed here

Note that it is *critical* that these three arguments match up in the impression URL and the clickthrough URL.

Cache Busting

If you're going to serve ads from OASIS using IMG tags, you really should consider adding a random number to the URLs you're using. OASIS does a lot of things to prevent caching of banners, but in order for those to have an effect, you've got to get your visitors to contact the server. Let's look at an example:

```
<A HREF="http://oasis.yourdomain.com/oasisc.php?s=35&w=468&h=60"><IMG  
SRC="http://oasis.yourdomain.com/oasisi.php?s=35&w=468&h=60" WIDTH=468  
HEIGHT=60 BORDER=0></A>
```

The first time a visitor hits this link, his browser will contact the OASIS server and get a banner ad. If the ad is animated (as so many banners tend to be), OASIS will not be able to send cache-busting HTTP headers (doing so causes bizarre looping of banners in many browsers). The second time the visitor's browser sees these tags, it may decide, "hey, I've got this in cache, so there's no need to contact this OASIS server". The visitor sees the same tired banner ad.

A solution is to put a random number into the URL for OASIS. You have to do this in a safe manner (you don't want the random number to interfere with the normal behavior of OASIS). The best way to do this is to create a new CGI variable (let's use `cb`) and tack it on to the OASIS URL:

```
<A HREF="http://oasis.yourdomain.com/oasisc.php?s=35&w=468&h=60&cb=123456"><IMG  
SRC="http://oasis.yourdomain.com/oasisi.php?s=35&w=468&h=60&cb=123456"
```

```
WIDTH=468 HEIGHT=60 BORDER=0></A>
```

There are different ways to add this random number. If you can afford the CPU cycles, you can use a program to generate a new random number each time a visitor loads a page (and using SSI to include it on the page). If your pages are dynamically generated, you can use your programming language's features to include the random number. You can have static SSI files that are rewritten periodically by a process running on your Web server. Or you can have a program rewrite the pages themselves. Use whatever method suits your site best.

Instance IDs

An instance ID helps to alleviate problems from the unreliability of cookies (remember that some users will have cookies disabled). It is a unique number that is added to both the `oasisi.php` and `oasisc.php` URLs in an impression/clickthrough pair.

Generally, the value is added dynamically via Javascript or server-side scripting. It should be unique (or at least picked randomly from a large enough range that collisions are unlikely).

Another benefit of IIDs is that you can use two banners of the same section and dimension on a single page as long as their IIDs are different. Without IIDs, OASIS would not be able to accurately deliver clickthroughs in such a scenario.

As a final advantage, the IID will help with cache busting (see above).

```
<A  
HREF="http://oasis.yourdomain.com/oasisc.php?s=35&w=468&h=60&iid=6879543"><IMG  
SRC="http://oasis.yourdomain.com/oasisi.php?s=35&w=468&h=60&iid=6879543"  
WIDTH=468 HEIGHT=60 BORDER=0></A>
```

Specifying the Creative ID

You can also use the `c` CGI parameter to specify the exact creative to run. If you do this, you must pass the `l` (lowercase "L") parameter as well to force the script to log the impression.

```
<A HREF="http://your.server.name/oasisc.php?c=27<IMG  
SRC="http://your.server.name/oasisi.php?c=27BORDER=0 ALT="My Creative"></A>
```

Note that if you link directly to creatives, you should not schedule the creatives for specific impression numbers, since the delivery engine will not have good control over how many times the creative gets delivered.

Method 2: IFRAMEs and ILAYERs

The IFRAME is an MSIE-only tag. It allows you to pull HTML content from another URL into your document. It doesn't actually incorporate the content directly into the document, but it does make it appear to be on the same page as the rest of the document.

Since Netscape Navigator will not honor the IFRAME tag, you have to provide a backup tag. MSIE will ignore the backup tag and will only display the IFRAME content.

Here's an example:

```
<IFRAME SRC="http://oasis.yourdomain.com/oasisi-i.php?s=35&w=468&h=60"
MARGINWIDTH=0 MARGINHEIGHT=0 HSPACE=0 VSPACE=0 FRAMEBORDER=0 SCROLLING=NO
WIDTH=468 HEIGHT=60> <A
HREF="http://oasis.yourdomain.com/oasisc.php?s=35&w=468&h=60"><IMG
SRC="http://oasis.yourdomain.com/oasisi.php?s=35&w=468&h=60" WIDTH=468
HEIGHT=60 BORDER=0></A> </IFRAME>
```

MSIE will create a 468x60 IFRAME and fill it with content from

`http://oasis.yourdomain.com/oasisi-i.php.`

Navigator will ignore the IFRAME tag and display what comes between the <IFRAME> and the </IFRAME> tags. This is a nice hybrid approach between method 1 and method 3. You get most of the advantages of embedded ad serving (for users of MSIE), with the convenience of a standalone ad server.

You can expand upon this method with the ILAYER tag, a Netscape-only tag. In the following example, Netscape will use the ILAYER section and ignore the NOLAYER section. IE will use the IFRAME section inside the NOLAYER section. Other browsers will fall through to the IMG tag between the IFRAME tags.

```
<NOLAYER>
<IFRAME SRC="http://oasis.yourdomain.com/oasisi-i.php?s=8&w=468&h=60"
WIDTH=468 HEIGHT=60 FRAMEBORDER="no" BORDER=0 MARGINWIDTH=0
MARGINHEIGHT=0 SCROLLING="no"><A
HREF="http://oasis.yourdomain.com/oasisc.php?s=8&w=468&h=60"><IMG
SRC="http://oasis.yourdomain.com/oasisi.php?s=8&w=468&h=60"
BORDER=0 WIDTH=468 HEIGHT=60></A>
</IFRAME>
</NOLAYER>
<ILAYER ID="layer1" VISIBILITY="hidden" WIDTH=468 HEIGHT=60></ILAYER><P>
<LAYER
SRC="http://oasis.yourdomain.com/oasisi-i.php?s=8&w=468&h=60"
WIDTH=468 HEIGHT=60 VISIBILITY="hidden"
onLoad="moveToAbsolute(layer1.pageX,layer1.pageY);clip.height=60;clip.width=468;visib
```

When using IFRAMEs with rich media, you must be sure that the code for your rich media includes `TARGET="_top"` (or `TARGET="_new"`) in every hyperlink. Otherwise, the clickthrough URL will open inside the IFRAME itself.

Some users have reported problems with the ILAYER tag in some versions of Netscape Navigator 4.7x. For more discussion on the topic, see https://sourceforge.net/forum/forum.php?thread_id=646644A.

Method 3: Embedding OASIS Ads

If you want to place OASIS ads on PHP-generated pages, and if OASIS is running on the same server you use to serve your site, you can use embedded PHP calls. This method has some real advantages:

- you can serve ALT tags in your image-based banners
- you can serve rich media in addition to image-based banners

- there is a greatly reduced chance of clickthrough errors, since the HTML generated by OASIS will encode the ID of the creative being served

To do this, you must put the following tags at the very top of your document (don't even put in any whitespace before this code):

```
<?php
require("/home/webdocs/oasis/oasisi-e.php");
$ad = get_creative(5, 468, 60, '');
?>
```

In the call to `get_creative()`, you pass the section number, the width and height of the desired creative, and an optional frame target.

It's critical that the code be the very first thing in the document, since the code may need to spit out a cookie for the user. With PHP, any whitespace preceding this block of code will be output to the user *before* the code is executed, thereby preventing the cookie from being set.

Once you've made the call to put the creative into a variable, you can place it on the page in this way:

```
<?php echo $ad; ?>
```

If you have multiple sections on a single page (for example, "homepage left" and "homepage right"), you just need to get both ads into different variables in the first block of code:

```
<?php
require("/home/webdocs/oasis/oasisi-e.php");
$ad1 = get_creative(5, 120, 90, '');
$ad2 = get_creative(6, 120, 90, '');
?>
```

Then you can place the ads wherever you want with this:

```
<?php echo $ad1; ?>
```

and this:

```
<?php echo $ad2; ?>
```

Specifying a frame target will generate an `<A HREF>` tag with a "TARGET" modifier. This works best for Image banners, but it can also work for rich media -- when OASIS serves rich media, it modifies any "A HREF" in the rich media to insert a "TARGET" modifier. Here's a sample call to `get_creative()` that specifies a frame target:

```
<?php
require("/home/webdocs/oasis/oasisi-e.php");
$ad = get_creative(5, 120, 90, '_TOP');
?>
```

`get_creative()` can also accept an optional 5th argument that specifies a particular creative (useful if you want to explicitly specify the ad to run).

Method 4: Remote Javascript Invocation

Most modern browsers will allow your Web page to invoke a Javascript source file from another URL. You can use this to insert an OASIS banner into your page.

```
<SCRIPT LANGUAGE="JavaScript"
SRC=http://oasis.yourdomain.com/oasisi-j.php?s=1&w=468&h=60">
</SCRIPT>
<NOSCRIPT>
<A HREF="http://oasis.yourdomain.com/oasisc.php?s=1&w=468&h=60"><IMG
SRC="http://oasis.yourdomain.com/oasisi.php?s=1&w=468&h=60"
WIDTH=468 HEIGHT=60 BORDER=0></A>
</NOSCRIPT>
```

Note the NOSCRIPT section for browsers not supporting Javascript.

Delivery Engine

Impression Script

`oasisi.php` is the script used to deliver an impression.

`oasisi.php` is responsible for delivering image banner impressions when you are using the IMG tagging delivery method. In this case, the URLs take the form

```
<IMG SRC="http://oasis.yourdomain.com/oasisi.php?s=5&w=468&h=60" BORDER=0  
HEIGHT=468 WIDTH=60>
```

You will note that in the tag, we specifying three things:

- section (CGI variable "s")
- width (CGI variable "w")
- height (CGI variable "h")

OASIS uses these three pieces of information to determine which creative to display to the user. It will search the list of creatives of the appropriate height and width which assigned to the section, and pick one based on a number of rules.

Before looking for candidate creatives, OASIS acquires a semaphore. Independent copies of the delivery engine must be able to scan the available creatives, select one, and update the "Remaining" field without trampling one another.

OASIS will first poll the Hourly Assignments shared memory segment for the list of all w x h creatives (of MediaType "Image") assigned to section s. It will then go through each of these and pull from the Hourly Targets shared memory segment the hourly impression target, weight, and number of remaining impressions needed to meet the hourly target.

Creatives with non-zero impression targets and zero remaining are ignored. These have already reached their hourly targets and should not run any more this hour.

If there are any creatives with non-zero impression targets where the number remaining is greater than 0, these get top priority. They are weighted according to the number of remaining impressions, and then one is randomly selected.

If there are no creatives with non-zero impression targets and more than zero remaining impressions, one of the creatives with a zero impression target is selected, according to the weights assigned to these creatives.

When OASIS randomly selects a creative, it basically adds up the weights of all candidate creatives (or in the case of non-zero-impression-target creatives, it uses the remaining impressions as "weights"); then selects a random number from 0 to the sum of the weights. It then loops through the candidates, decrementing the random number by each candidate's weight until the random number is less than zero. Whichever candidate causes the number to be less than zero is the creative served.

If for some reason, there is nothing of w x h assigned to section s (or if all have impression targets that have been met), the engine will not be able to select a creative to run. In such cases (and in any cases

where the delivery engine encounters an error with shared memory or a semaphore), it will deliver a 1x1 invisible GIF (the actual GIF data is hard-coded into `oasisi.php`).

At this point, we have a creative ID. OASIS will now decrement the Remaining field for the creative (it is unfortunate that we can't do this later, after we've actually delivered the content to the user, but if we waited that long, we'd be holding the semaphore for too long, which would have a huge impact on performance). OASIS immediately records the delivery in `oasis.log` (in the directory 'LogDir', specified in the Preferences interface). It records 'imp' for a successful impression and 'ierr' when it has to deliver the 1x1 GIF. The shared memory and log are updated within the protection of the semaphore, and are done one after the other to reduce opportunities for an impression to get recorded in one but not the other. OASIS will now retrieve the actual content of the creative from the Creative Content shared memory segment. Here is pseudocode for the retrieval process:

```
if(creative is a third-party creative)
{
    ##### content is a text string representing the URL for the
    ##### third-party ad server

    replace "[CB]" strings in the URL with random number
    save the Location header (along with some cache control headers)
}
else
{
    ##### content is binary data for a GIF image

    ##### we can only print cache control headers for non-animated
    ##### GIFs (doing so with animated GIFs results in browsers looping
    ##### through a series of GIFs -- it's really wacky)
    if(creative is not animated)
    {
        save some cache control headers
    }

    save MIME type header
    save content
}
```

The Delivery table is now updated to record which creative was seen by the user on section s, so that if the user clicks through, he will be directed to the proper clickthrough URL. The delivery is recorded twice; once using the OASISID cookie number (either presented by the client or just now assigned to him) and once using the IP address. Although we hope that the user is accepting cookies, and we will be able to use the cookie to deliver the right clickthrough, we can't make that assumption, so we also have to record the IP address as a sort of backup. If we have to rely on the IP address, the clickthrough accuracy cannot be guaranteed, but it's better than nothing.

Finally, the headers and the content saved during the retrieval step are sent to the user, and the delivery engine is done.

Log Codes Here are the meanings of the various codes logged by the delivery engine.

Event	Code	Description
imp		successfully served impression
ierr	no_sem_1	couldn't acquire the semaphore used to determine whether the engine is in overflow mode

Delivery Engine

no_sem_2	couldn't acquire the semaphore used to control access to the delivery tables
no_sec_cr	no active creatives for the specified section
no_secdim_cr	no active creatives of the right dimension for the specified section
no_ht_shm	unable to connect to the HourlyTargets shared memory segment (diagnostics may be available in parentheses)
secdim_cr_maxed_out	the creatives assigned to this section are maxed out (all have targets, and all have remaining = 0)
no_ht_shm_2	unable to connect to the HourlyTargets shared memory segment the second time, when we attempt to decrement the "remaining" count (diagnostics may be available in parentheses)
no_target_info	unable to retrieve target info from the HourlyTargets shared memory segment for the selected creative (diagnostics may be available in parentheses)
no_target_info_put	unable to put target info into the HourlyTargets shared memory segment for the selected creative (diagnostics may be available in parentheses)

These log files are picked up hourly by `hourly_maint.php`, which distills it down into a number of entries in the HourlyStats table.

Instance IDs

In addition to using cookies and IP addresses to link impressions to clickthroughs, `oasisi.php` will take a value passed in the `iid` CGI variable and store it in the delivery table, concatenated with the user's IP address. This can be referenced by `oasisc.php` as a unique identifier to determine the correct clickthrough.

Other uses for oasisi.php

If you are using the embedded tag method to display the ads on your site, `oasisi-e.php` is responsible for the bulk of the work described in this section. But to actually deliver an Image banner, it will call `oasisi.php`. The link generated by `oasisi-e.php` will take the form

```
<IMG SRC="http://oasis.yourdomain.com/oasisi.php?c=45" BORDER=0 HEIGHT=468  
WIDTH=60>
```

This form specifies exactly which creative is to be delivered. `oasisi.php` doesn't have to do much work in this case; it simply has to deliver the contents of the designated creative.

It is not advisable to use links of this form directly in your site's pages. If you're not using `oasisi-e.php` to deliver the ads, specify the section, width, and height to `oasisi.php` and let OASIS make the decision of which creative to run.

Embedded Impression Code

`oasisi-e.php` contains the code used to embed OASIS calls directly into your site's pages. To use this method, you must run OASIS on your Web server, and you can only embed the ads in PHP pages. On the page where you want to embed an ad, you would have this:

```
<?php
require("/home/webdocs/oasis/oasisi-e.php");
get_creative(5, 468, 60, '');
?>
```

You will note that in the `get_creative()` function call, we specifying four things:

- section
- width
- height
- frame target (optional)

OASIS uses these three pieces of information to determine which creative to display to the user. It will search the list of creatives of the appropriate height and width which assigned to the section, and pick one based on a number of rules.

Before looking for candidate creatives, OASIS acquires a semaphore. Independent copies of the delivery engine must be able to scan the available creatives, select one, and update the "Remaining" field without trampling one another.

`get_creative()` uses the exact same algorithm for selecting a creative as is used in `oasisi.php`. The only difference is that `get_creative()` also considers creatives with MediaType of "RichMedia" (`oasisi.php` only considers those with MediaType of "Image").

Another difference between `get_creative()` and `oasisi.php` is that `get_creative()` does not use the Delivery table to record which creative was seen by each user. In the case of Image ads, the creative number is embedded right into the URL that `get_creative.php` generates for `oasisc.php`.

The following routines are shared between `oasisi.php` and `oasisi-e.php`: `get_client_id()`, `select_creative()` (with a minor change: it saves the MediaType of the selected creative to a global variable for later use), `record_delivery()`, and `log_msg()`.

If for some reason, there is nothing of `w x h` assigned to section `s` (or if all have impression targets that have been met), the engine will not be able to select a creative to run. In such cases, it will deliver an empty string.

At this point, we have a creative ID. If the selected creative has a MediaType of "Image", `get_creative()` will return the HTML to display that specific creative on the page (via a URL to `oasisi.php`), along with a cache-busting random number. If your call to `get_creative()` specified a frame target, the `<A>` tag will include a "TARGET=" modifier. If the creative has a MediaType of "RichMedia", `get_creative()` will return the actual content of the ad (which presumably is of an appropriate format to embed directly in the page). The frame target does not affect RichMedia creatives.

OASIS records the delivery in `oasis.log` (in the directory 'LogDir', specified in the Preferences interface). Note that locally-served Image ads are not recorded, since the subsequent request to `oasisi.php` will

record the impression. It records 'imp' for a successful impression and 'ierr' when it has to deliver the 1x1 GIF. There are also a number of codes we can record:

Event	Code	Description
imp		successfully served impression
ierr	no_sem_1	couldn't acquire the semaphore used to determine whether the engine is in overflow mode
	no_sem_2	couldn't acquire the semaphore used to control access to the delivery tables
	no_sec_cr	no active creatives for the specified section
	no_secdim_cr	no active creatives of the right dimension for the specified section
	no_ht_shm	unable to connect to the HourlyTargets shared memory segment (diagnostics may be available in parentheses)
	secdim_cr_maxed_out	the creatives assigned to this section are maxed out (all have targets, and all have remaining = 0)
	no_ht_shm_2	unable to connect to the HourlyTargets shared memory segment the second time, when we attempt to decrement the "remaining" count (diagnostics may be available in parentheses)
	no_target_info	unable to retrieve target info from the HourlyTargets shared memory segment for the selected creative (diagnostics may be available in parentheses)
	no_target_info_put	unable to put target info into the HourlyTargets shared memory segment for the selected creative (diagnostics may be available in parentheses)

Note that each embedded ad makes two calls to the OASIS delivery engine, the first when your PHP calls `get_creative()` and the second when your browser requests `oasisi.php`. You don't have to worry about these requests getting logged twice, though, because when `oasisi.php` is called with a specific creative number, it does not log the request, knowing that `get_creative()` already did the logging.

The log files are picked up hourly by `hourly_maint.php`, which distills it down into a number of entries in the HourlyStats table.

Iframe Impression Code

`oasisi-i.php` contains the code used to deliver content to IFRAMES (an MSIE-only feature that allows you to embed the content from another URL more or less directly in your page).

This code is *exactly* like `oasisi-e.php`, except for a single line of code:

```
print get_creative($s, $w, $h, '_top');
```

A link to `oasisi-i.php` will spit out HTML suitable for use in an IFRAME.

We could have certainly implemented this by require-ing `oasisi-e.php`, but for performance reasons, it is better just to replicate the code in both files.

Javascript Impression Code

`oasisi-j.php` contains the code used to deliver content as Javascript source, feature that allows you to embed the banner directly into the HTML of your page (for browsers that support remote Javascript invocation).

This code is *exactly* like `oasisi-i.php`, except for a call to `javafy()`, which turns the HTML for the creative into Javascript.

A link to `oasisi-j.php` will spit out Javascript which writes HTML to the current document.

Some shared code between the delivery scripts would be advantageous from a code maintenance standpoint, but for performance reasons, it is better just to replicate code in each script.

Clickthrough Script

`oasisc.php` is the script used to deliver a clickthrough. It is called in an A HREF tag. For example:

```
<A HREF="http://oasis.yourdomain.com/oasisc.php?s=5&w=468&h=60">
```

You will note that in the tag, you are specifying three things:

- section (CGI variable "s")
- width (CGI variable "w")
- height (CGI variable "h")

OASIS uses these three pieces of information to look up in the Delivery table which creative of dimension w x h was last seen by the user on section s.

OASIS looks for a url (which can be passed in the `url` CGI variable, usually as part of a rich media creative). If found, it redirects to that URL.

Next it looks for a creative ID. Embedded deliveries generate a link to `oasisc.php` that includes the creative ID, eliminating any ambiguity about what creative was last seen. If found, the clickthrough for this creative is delivered.

If neither a URL or creative ID is found, OASIS will try to match the clickthrough to a record in the Delivery table.

If provided, OASIS uses the `iid` CGI variable as a unique identifier for the impression. If sites use this variable, they must take care to use the same value for `iid` in each `oasisi.php/ oasisc.php` pair. If no `iid` is found, OASIS tries to obtain the user's unique identifier from the OASISID cookie.

If a unique identifier is obtained, OASIS will attempt to look up in the Delivery table the w x h creative which was last seen by the user on section s. If it finds it, it will deliver the clickthrough.

If no unique ID was obtained (or if no cookie was obtained), OASIS will look in the Delivery table for the w x h creative which was last seen by somebody at the user's IP address (hopefully this is the user himself, but note that it is extremely unreliable in this day and age of NAT-ed firewalls) on section s.

If we did not get a creative ID, we deliver an empty Location string, which generally reloads the user's current page. This behavior might be something worth changing in the future so that the user gets some sort of error message.

If we `_did_` get a creative ID, we have to note it in the Hourly Targets shared memory segment (which of course, we do within the protection of a semaphore so that we don't step on any other copies of `oasisi.php` or `oasisc.php`).

Now we grab the clickthrough URL from the Creative Clickthrough shared memory segment and print out a Location header (along with some cache control headers) to redirect the user to the clickthrough destination.

Finally, we log the clickthrough. We can record either "click" or "cerr" as the event. There are also a number of codes we can record:

Event	Code	Description
click	success	normal delivery
	fallthru	got a cookie, but had to fall through to the IP address
	nocookie	didn't get a cookie; had to use IP address
cerr	no_cr_found	couldn't find a CreativeID in the Delivery table
	no_sem_1	couldn't acquire the semaphore used to determine whether the engine is in overflow mode
	no_sem_2	couldn't acquire the semaphore used to control access to the delivery tables
	no_ht_array	couldn't find the hourly targets in shared memory (diagnostics may be available in parentheses)
	no_ct_array	couldn't find the clickthrough URL in shared memory

Maintenance Scripts

Daily Maintenance

Once per day (at hour 0), `hourly_maint.php` runs daily maintenance. This used to be implemented in a separate script; it is now implemented within `hourly_maint.php`

Check for underdelivery

The script looks through all the creatives in the `DailyTargets` table (remember that this script only runs at midnight, and thus it is looking at the daily targets for yesterday, *after* the hour 23 results have been tabulated by `hourly_maint.php`). For any creatives which have specific impression targets, it checks the number remaining. If that number is greater than 0, mail will be sent to the administrator.

The administrator's email is in the `OASISPrefs` table as "AdminEmail".

Compute daily targets

Under the protection of a lock, the `DailyTargets` table is emptied and reloaded. The creatives' targets are calculated in a specific order. First, all campaigns with `ImpressionsGuaranteed - ImpressionsDelivered > 0` are scanned. A daily target for the campaign is generated, and then this target is split among the campaign's creatives. Creatives with non-zero `ImpressionsGuaranteed` get an appropriate number of impressions to meet their targets (unless that number would exceed those allotted to the campaign, in which case, the creative only gets the number allotted to the campaign). Creatives which have `ImpressionsGuaranteed = 0` get a share of the Campaign's impressions proportional to their `Weight`.

Finally, campaigns with no impression targets are scanned. Their creatives are inserted into the `DailyTargets` table with `Target = 0`, and

$$\text{Weight} = \text{int}(\text{Campaigns.Weight} * (\text{Creatives.Weight} / \text{Sum of all campaign creatives' weights}) * 100)$$

This multiplication preserves the relative weights of creatives within a campaign and the relative weights of campaigns to each other.

This might be a no-brainer, but it is important to note that as campaigns and creatives are scheduled, only those scheduled to run on today's day of the week will be scheduled. For example, if the script is running on a Monday, only campaigns and creatives slated to run on Mondays will be examined.

Load shared memory

Finally, the creatives which are scheduled to run today are loaded into shared memory. Here is where the semaphore acquired by `hourly_maint.php` is really important. The Creative Content and Creative Clickthrough shared memory segments are wiped clean (thus, if the delivery engine were running, it would experience severe trauma). For each creative in the `HourlyTargets` table, the `Contents`, `ClickthroughURL`, and other relevant fields (`Redirect`, `MIMEType`, `Animated`) are loaded into the two shared memory segments.

Hourly Maintenance

`hourly_maint.php` is run at the top of each hour. It reloads the shared memory segments that determine which creatives are assigned to which sections and how many of each to run.

Step-by-step through `hourly_maint.php`

This section will illustrate the various tasks performed by this script.

Record the last hour's traffic

Immediately upon launching, a semaphore is obtained (0x4f415300, or "OAS0" in ASCII) to prevent new data from being written to or read from the shared memory segments while we're performing our calculations. We want to hold this semaphore for as short a period as possible, since all ad delivery is paused while we're holding it.

Record the last hour's traffic

All of the impressions and clickthroughs are committed back to the database. The ImpressionsDelivered and ClickthroughsDelivered fields are updated in the Creatives table. Later, this information will be propagated up to the level of the campaigns, but for now, since we want to operate as fast as possible while holding the semaphore, we just record things at the creative level.

Call `daily_maint.php` if appropriate

If we're called during hour 0 (or if the `force_daily` command-line option is specified), we'll call the daily maintenance script, which will rebuild the DailyTargets table.

Build the assignment table

The script goes through all the campaign and creative section assignments and propagates them down through the section tree. It processes them in this order:

1. Campaign Includes
2. Creative Includes
3. Campaign Excludes
4. Creative Excludes
5. Campaign Exclusives
6. Creative Exclusives

In this way, creative assignments always override those of their parent campaigns. Also, exclusive assignments override all others.

A large table is constructed. For each section S in the section tree, there is a hash. The keys to this hash are creative dimensions ('120x90', '468x60', etc.). The value associated with each key D is an array of CreativeIDs for all the creatives of dimensions D which are running on section S. The delivery engine will use this table to quickly acquire a list of all candidate creatives for a given section.

Compute hourly targets

For each entry in the DailyTargets table, the script looks at how many hours are left in the day, how much traffic is slated to run during those hours (from the values you've defined in the Traffic Shaping interface) and what percentage of that traffic is remaining in the current hour. This is done on a per-creative level, since each creative can run at different hours during the day.

Example: suppose it is hour 22. You have said that you get on average 10,000 pageviews in hour 22 and 5,000 pageviews in hour 23. You have two active creatives. Creative 1 runs all hours of the day. Creative 2 runs hours 10 a.m. to 10 p.m. Each still needs 600 impressions before the end of the day. Creative 1 will be scheduled for

$$600 * 10,000 / (10,000 + 5,000) = 400 \text{ impressions}$$

Creative 2, which does not run in hour 23, will be scheduled for

$$600 * 10,000 / (10,000) = 600 \text{ impressions}$$

Creatives which do not have specific impression targets will be entered into the HourlyTargets shared memory if they are slated to run during the given hour.

For each active creative, four values are stored in the HourlyTargets shared memory segment: the hourly impression target, the weight of the creative, the number of impressions remaining, and the number of clicks delivered.

For creatives with impression targets, the number of impressions remaining is equal to the hourly impression target when the table is loaded. As impressions are delivered, this number decrements until it hits 0, at which point no more impressions are served.

For creatives without impression targets, the number of impressions remaining is 0 when the table is loaded. As impressions are delivered, this number goes negative.

Release the semaphore

We've done all the really tricky stuff; so it's now safe to allow delivery to resume.

Process log file

This step happens only if no options were specified on the command line (presumably, if you're calling the script by hand, you're specifying options. When you call the script by hand, you don't want to process the logs — we try to process them only once per hour to reduce the entries in the HourlyStats table).

The log file is slurped up and each entry is tallied. The result is that for each creative/section combination, a record is saved in the HourlyStats. Impressions, clicks, impression errors, and click errors are stored in the table. Reports are generated on the fly from these records.

In addition to the fairly detailed HourlyStats table, there is a table called CampaignDailyStats, which contains one record per campaign per day. This table exists for speed in generating invoices and the revenue report. You can't slice and dice the numbers like the HourlyStats, but it is a much more compact representation.

The contents of the log file are appended to the file `YYYY/MM-DD.log` in the directory specified by the `LogDir` preference. During hour 0, yesterday's log file is gzipped. Note that you can clean these files up at will; they are only there for your reference.

Update campaigns

Now we propagate the impressions and clicks recorded for each creative up to their parent campaigns.

Mark campaigns/creatives complete

Finally, we look for any campaigns or creatives which have either met their impression targets or have passed their end dates. At this point, we set the Status of those campaigns to "Complete".

Inventory Simulation

If it's currently hour 0 (and we're being run as a regular cron job, not manually), project available inventory and run a simulation. This is a compute-intensive job. It can take a couple of hours, depending on some of your preferences.

Adding `hourly_maint.php` to the crontab

Add this script to the Web server user's crontab. Do not run this script as anybody but that user, as this will result in creating shared memory segments that are not owned by the Web server user. This will interfere with normal operation of OASIS, as it will not be able to clear shared memory segments.

The job should run at the top of every hour, as so:

```
0 * * * * /path/to/oasis/mgmt/hourly_maint.php > /dev/null
```

Calling `hourly_maint.php` from the command-line

Under certain circumstances, you can run this script from the command-line. Do not run it as any other user but the one whose crontab runs the script normally (preferably your Web server user). You should call it in one of these ways:

```
/path/to/oasis/mgmt/hourly_maint.php start
```

This will force the running of `daily_maint.php`, and it will reload the hourly targets. It will not process the logs or attempt to record any traffic from the previous hour. Use this to start up OASIS after a reboot (and before you start your Web server).

```
/path/to/oasis/mgmt/hourly_maint.php force_daily
```

This is the same as "start", but it also records the last hour's traffic.

```
/path/to/oasis/mgmt/hourly_maint.php reload
```

This is basically the same as calling `hourly_maint.php` with no arguments, but it won't call the daily maintenance script (even if it is run during hour 0), and it won't run the inventory simulation (even if it is run during hour 0). It will record the last hour's traffic, process the logs, and reload the hourly targets.

```
/path/to/oasis/mgmt/hourly_maint.php stop
```

Maintenance Scripts

This method of invocation will run the script and record the last hour's traffic. It then clears shared memory and processes the log. It does not attempt to calculate any targets for the next hour. In fact, if `oasisi.php` runs after the shutdown process, it will not be able to deliver anything.

You should run this immediately after shutting down your Web server. Note that you can safely stop your Web server at any time without doing anything to OASIS. But if you want to reboot the server, you should run 'stop' to record the last hour's data to disk first.

```
/path/to/oasis/mgmt/hourly_maint.php resume
```

This method of invocation will not attempt to process logs or record the last hour's traffic. It will not try to clear shared memory. All it will do is reload shared memory. Use this after you've run 'stop', before restarting your Web server.

The difference between this method and the 'start' method is that 'start' will force a recalculation of daily targets. If you've been running and you stop the server only to decide to restart it, you can use 'resume'.

Minutely Maintenance

`minutely_maint.php` is run every 5 minutes (or as frequently as every minute, if you can afford the cycles and the hits to your database server).

The only real function of this script is to clean up the Delivery table. It uses the ClickthroughWindow preference to determine how long (in seconds) it should let entries live in the delivery table. You should set this preference to as large a number as you think your system can handle. The larger the number, the longer the entries stay in the table, but the more memory the Delivery table will take up (it is a heap table, stored completely in RAM).

To understand the implications of setting the ClickthroughWindow to a small value, use the following example. A user loads one of your site's pages, and along with it, gets an ad banner. The user then waits 12 minutes before clicking on the banner. If you have set your ClickthroughWindow to 600 seconds, the user will get a clickthrough error. If you have set your ClickthroughWindow to 900 seconds, the user will be redirected to the advertiser's URL.

Note that your delivery table will have to be able to accomodate the number of entries stored in (ClickthroughWindow + cron_interval) seconds, where cron_interval is the number of seconds between cron invocations of `minutely_maint.php`. So if you've set the ClickthroughWindow to 900 seconds, and you run `minutely_maint.php` every 5 minutes, you'll have to be able to accomodate 20 minutes' worth of entries in the delivery table.

Adding `minutely_maint.php` to the crontab

Add this script to the Web server user's crontab. If you want to run it every 5 minutes, add this entry to the crontab:

```
5,10,15,20,25,30,35,40,45,50,55 * * * * /home/webdocs/oasis/mgmt/minutely_maint.php > /dev/null
```

Log files

OASIS generates two types of logs, those from the delivery engine that record each delivered impression and clickthrough, and those from the administrative tools.

Delivery Engine Logs

The live delivery engine log is written to the file `oasis.log` in the directory specified in the "LogDir" record in the OASISPrefs table. When `hourly_maint.php` runs, it reads in the contents of the file, processes the entries, and tacks them onto the daily log file, stored in the `YYYY/MM-DD.log` file under the LogDir directory.

Each night, the file is gzipped (the location of gzip is in the "GzipPath" record in the OASISPrefs table. These files are not used by the software. They exist merely to provide a record of OASIS's activity.

For more information on the meaning of some of the error codes logged by OASIS, see the Delivery Engine section, specifically, the sections on the individual scripts.

Administrative Logs

Administrative information is logged to `oasis_admin.log` in the LogDir directory. Each time the DailyTargets table is updated and each time the HourlyTargets table is cleared and reloaded, entries are made into this log. This log is purely for diagnostic purposes. It can, for example, help you figure out why the DailyTarget information for a campaign has been altered (each time you save a campaign or creative, the campaign's DailyTarget entries are recomputed and this is logged here).

Log files

Shared Memory

OASIS utilizes a number of shared memory segments to facilitate rapid ad delivery and to cut down the number of queries made against the database.

Hourly Assignments

SHM ID: 0x4f415300 (OAS0)
 0x4f415305 (OAS5),
 overflow
Read by: oasisi.php
Written by: hourly_maint.php
Size: 500 KB

Variables are hashed into the shared memory segment based on section number.

Each variable is a hash keyed by dimensions (WxH)

Each hash value is an array of creatives of the correct dimensions currently assigned to the section.

The size needed for this segment is dependent on the number of sections you have and the number of creatives.

A good formula to use is $11 * (\text{sections} * \text{creatives})$ where sections is the number of sections that have active creatives assigned to them, and creatives is the total number of active creatives. This is overkill, unless you have all creatives assigned to all sections, but it gives you a good safety margin.

In testing, 1024 creatives (of 8 different dimensions), all assigned to 128 sections required 1.37 MB of storage. This, of course, is a worst case scenario — it assumes that you have 1024 active creatives (pretty unlikely), and that each and every one of those creatives is assigned to every single section of your site (again, very unlikely with a large site).

In the Admin interface, click on "Hourly Assignments" to see the contents of this segment. At the bottom, you can see how much of the allocated space is being used. If you think you need more, you can adjust the ShmSizeHourlyAssignments preference value.

Note that while the delivery engine is being reloaded, delivery takes place from the overflow tables; only creatives for which exact impression numbers are not important are listed in these tables. In this way, the pause in delivery is nearly eliminated.

Hourly Targets

SHM ID: 0x4f415301 (OAS1)
 0x4f415306 (OAS6),
 overflow
Read by: oasisi.php
 oasisc.php
Written by: hourly_maint.php
 oasisi.php

oasisc.php

Size: 50 KB

Variables are hashed into the shared memory segment based on creative number.

Each variable is an array of the following values: (target, weight, remaining, clicks, media type)

It may seem a bit strange to use "remaining", since it often results in negative numbers, but this allows us to more quickly identify creatives that `_need_` impressions during the hour. Any creative with a remaining value > 0 has to get impressions. If we kept an incrementing counter instead, we'd have to perform a subtraction of the delivered number from the target number to determine who needs impressions. This is a slight inefficiency. I will admit, however, that the optimization of using a decrementing counter may not even make a significant difference, given all the other calculations that are going on.

The size needed for this segment is proportional to the maximum number of active creatives you have at any one time. It requires approximately 64 bytes for each active creative. 50 KB would allow for 780 active creatives in the system on any given day.

Note that while the delivery engine is being reloaded, delivery takes place from the overflow tables; only creatives for which exact impression numbers are not important are listed in these tables. In this way, the pause in delivery is nearly eliminated.

Creative Content

SHM ID: 0x4f415302 (OAS2)
0x4f415307 (OAS7),
overflow
Read by: oasisi.php
Written by: daily_maint.php
Size: 4 MB

Variables are hashed into the shared memory segment based on creative number

Each variable is an array of the following values (Content, Redirect, MIMEType, Animated)

The amount of space required is equal to the number of active creatives * (Average Size + 85 Bytes). So if you expect your ad content to take up 15KB each, then you'll need a little bit more than 15 MB to hold 1000 active creatives. Keep in mind that creatives that use third-party ad delivery require considerably less storage.

In the Admin interface, click on "Creative Content" to see the contents of this segment. At the bottom, you can see how much of the allocated space is being used. If you think you need more, you can adjust the `ShmSizeCreativeContent` preference value.

Note for FreeBSD users:

In the FreeBSD default GENERIC kernel, there is maximum shared memory segment size of 4194304 (4MB).

If you want bigger `ShmSizeCreativeContent`, you must recompile kernel with this options:


```
options SHMMAXPGS=2049
options SHMMAX=" (SHMMAXPGS*PAGE_SIZE+1) "
```

This sets maximum shared memory to 8MB. If you want 16MB, you must use 4097 and so on.

Creative Clickthrough

SHM ID: 0x4f415303 (OAS3)
0x4f415308 (OAS8),
overflow
Read by: oasis.php
Written by: daily_maint.php
Size: 500 KB

Variables are hashed into the shared memory segment based on creative number

Each variable is a string containing the clickthrough URL for the creative.

The size required for this segment is proportional to the maximum number of active creatives. It is roughly equal to the number of active creatives * 276 Bytes

This is a worst-case number; it assumes that each active creative has a 255-character clickthrough URL (the largest that can be stored in the database table).

A 300 KB shared memory segment can therefore store well over 1000 active creatives.

In the Admin interface, click on "Creative Clickthrough" to see the contents of this segment. At the bottom, you can see how much of the allocated space is being used. If you think you need more, you can adjust the ShmSizeCreativeClickthroughs preference value.

Deliveries

The original design of OASIS called for a Deliveries shared memory segment, where we would record the creatives seen by each user for future clickthroughs. Unfortunately, PHP's shared memory manager is too primitive to handle the rapid insertion of many thousands of keys.

Instead, I've opted to use a MySQL heap table to store the delivery information. The insertions are reasonably fast, and having an indexed table allows for much faster lookups.

Overflow flag

SHM ID: 0x4f415304 (OAS4)
Read by: oasis?.php
Written by: hourly_maint.php
Size: 100 B

This tiny shared memory segment indicates whether the delivery engine is in its overflow mode. It flips into overflow at the top of the hour while it reads the primary delivery table values, recalculates the next hour's numbers, and reloads the primary delivery tables.

Shared Memory

During overflow mode, alternate assignment and target shared memory segments are used so that delivery can continue. Creatives scheduled in these tables are allowed to "overflow", meaning that they do not have specific impression goals, and have been designated as "Overflow OK". This allows delivery to continue without interruption during hourly scheduling calculations.

Database Schema

This section details the schema of the various tables used in OASIS.

This section is out-of-date.

Advertisers Table

Column	Type	Default	Extra	Comment
🔑 AdvertiserID	int(11)		auto_increment	
Name	varchar(128)			
URL	varchar(255)			
ContactName	varchar(128)			
StreetAddress	text			
City	varchar(64)			
State	varchar(64)			
PostalCode	varchar(32)			
Country	varchar(64)			
Phone	varchar(64)			
Fax	varchar(64)			
ContactEmail	varchar(255)			
Note	text			
Login	varchar(32)			
Password	varchar(32)			

Campaigns Table

This table stores all the information about campaigns.

Note that there is an analogous table, SimCampaigns, that is used during the inventory simulation.

Column	Type	Default	Extra	Comment
🔑 CampaignID	int(11)		auto_increment	
🔑 AdvertiserID	int(11)			
Name	varchar(128)			
🔑 Status	enum('Active', 'Cancelled', 'Completed', 'Inactive', 'Suspended')	Inactive		By default, new campaigns are given a status of "Inactive". Only "Active" campaigns have their creatives scheduled. When a campaign meets its impression targets or its EndDate, it will be marked as "Complete". You can manually set a campaign to "Suspended" or "Cancelled". Campaigns with Status="Completed" or "Cancelled" do not show up in the list of campaigns.
🔑 StartDate	date	0000-00-00		
🔑 EndDate	date	0000-00-00		
OverflowOK	enum('Y', 'N')	Y	When new creatives are added, their OverflowOK values are set based on the value of the campaign's OverflowOK field.	
ImpressionsGuaranteed	int(11)			The number of impressions to be delivered for the campaign. If this value is set to 0, the campaign will be treated as a "house" campaign, and will run only after campaigns which have non-zero values have fulfilled their hourly targets.
ImpressionsDelivered	int(11)			Each hour, the hourly maintenance script will update this value based on the number of impressions in the previous hour.
ClicksGuaranteed	int(11)			not used at this point
ClicksDelivered	int(11)			Each hour, the hourly maintenance script will update this value based on the number of clicks in the previous hour.
Weight	int(11)	1		The weight only comes into play if ImpressionsGuaranteed=0. All campaigns with ImpressionsGuaranteed=0 will be served in numbers

Database Schema

				proportional to their Weight values.
Note	text			
CPM	float(10,2)	0.00		Cost per 1000 impressions for the campaign.
CPC	float(10,2)	0.00		Cost-per-click for the campaign.
Fixed	float(10,2)	0.00		A fixed charge associated with the campaign.
PayFixed	enum('By Period', 'CIA', 'End of Campaign')	End of Campaign		This field indicates how the advertiser is to be invoiced for the fixed charges. If it is "By Period", the cost will be pro-rated by number of days in each invoicing period. If it is "CIA", it will all be charged in the first invoice for the campaign. If it is "End of Campaign", it will all be charged in the last invoice for the campaign.
AgencyCommission	float(10,2)	0.00		This percentage is applied to the total charges on each invoice and is subtracted from the amount due.
PurchaseOrder	varchar(64)			This field allows you to specify a PO number that will appear on the invoice.
ForceInvoice	enum('Y','N')	N		Determines whether an invoice is to be generated for the campaign if CPM, CPC, and Fixed are all 0.
Notify	text			E-mail addresses to which weekly campaign reports should be sent (separated by commas)
EvenDelivery	enum('Day', 'Week', 'Month')	Day		If ImpressionsGuaranteed > 0, how are the impressions to be scheduled? Should the same amount be delivered each day, each week (or fraction of a week), or each month (or fraction of a month)?
DaysOfWeek	tinyint(3) unsigned	127		A bitmask indicating which days of the week the campaign should run; low bit is Sunday, high bit is Saturday.
HoursOfDay	mediumint(8) unsigned	16777215		A bitmask indicating which hours of the day the campaign should run; low bit is hour 0, high bit is hour 23.

Creatives Table

This table stores all the information about creatives.

Note that there is an analogous table, SimCreatives, that is used during the inventory simulation.

Column	Type	Default	Extra	Comment
🔑 CreativeID	int(11)		auto_increment	
🔑 CampaignID	int(11)			
Name	varchar(64)			
🔑 Status	enum('Active', 'Cancelled', 'Completed', 'Suspended')	Active		A creative is by default "Active". When it reaches its completion date or its impression target, it is marked as "Completed". You can manually mark it as "Suspended" or "Cancelled".
StartDate	date	0000-00-00		Creatives can have start dates that are independent of the campaign's start date -- note that an start date set earlier than the campaign will be overridden by the campaign's start date.
EndDate	date	0000-00-00		Creatives can have end dates that are independent of the campaign's end date -- note that an end date set later than the campaign will be overridden by the campaign's end date.
OverflowOK	enum('Y', 'N')	Y	If 'Y', and ImpressionsGuaranteed=0, this creative can be used during overflow delivery (delivery while hourly impressions are recalculated).	
Redirect	enum('Y', 'N')	N		Set to "Y" if this is a third-party redirection.
MediaType	enum('Image', 'Rich Media')	Image		
MIMEType	varchar(64)			This is set to the MIME type of the content. For images, the graphic file format is used to determine the MIME type, but it can be overridden if it is misidentified.
Animated	enum('Y', 'N')	N		This is set automatically by the ImageMagick tool identify when images are

Database Schema

				uploaded. It is important for the delivery of cache-busting headers (the headers can't be used with animated GIFs).
Width	smallint(5) unsigned			
Height	smallint(5) unsigned			
Weight	int(11)	1		This is the weight of creatives relative to the other creatives in their campaign. If a daily impression target is specified for the campaign, the weight determines what share of those impressions will go to this creative. If the campaign has no impression target, then the creative will run with a weight calculated from both the campaign weight and the creative weight.
Content	blob			This can contain the actual digital image for the creative, or in the case of a third-party redirection, it can contain the URL.
AltText	varchar(255)			
ClickthroughURL	varchar(255)			
ImpressionsGuaranteed	int(11)			The number of impressions to be delivered for this creative. This only has an effect if the campaign itself has a non-zero ImpressionsGuaranteed.
ImpressionsDelivered	int(11)			Each hour, the hourly maintenance script will update this value based on the number of impressions in the previous hour.
ClicksDelivered	int(11)			Each hour, the hourly maintenance script will update this value based on the number of clickthroughs in the previous hour.
DaysOfWeek	tinyint(3) unsigned	127		A bitmask indicating which days of the week the campaign should run; low bit is Sunday, high bit is Saturday. This value is ANDed with the bitmask from the campaign.



Database Schema

HoursOfDay	mediumint(8) unsigned	16777215		A bitmask indicating which hours of the day the campaign should run; low bit is hour 0, high bit is hour 23. This value is ANDed with the bitmask from the campaign.
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Sections Table

Column	Type	Default	Extra	Comment
🔑 SectionID	smallint(6)		auto_increment	
🔑 PSectionID	smallint(6)			The SectionID of this section's parent.
Name	char(64)			
ReportName	char(64)			The name that will be used on reports. It is generally a bit longer and more descriptive than the Name, since the Name might only be informative in the context of its location in the section tree.
Active	enum('Y', 'N')			The delivery engine looks at this field when assigning creatives to sections. If it is 'N', no creatives will be assigned to this section or any of its children. Also, during inventory checking, if an active section is found to have no creatives assigned to it, mail will be sent to the administrator.

CampaignAssignments Table

Column	Type	Default	Extra	Comment
 CampaignID	int(11)			
 SectionID	smallint(6)			
Type	enum('Include', 'Exclude', 'Exclusive')	Include		<p>If Type is set to "Include", the campaign will run on the section specified (and all sections beneath it in the section tree). If it is set to "Exclude", it will not run on the section specified (or any beneath it), overriding Include assignments made higher up on the tree. If it is set to "Exclusive", it will run on the section specified (and all beneath it), and no other campaigns will be allowed to run on those sections.</p> <p>Note that CreativeAssignments override CampaignAssignments.</p>


CreativeAssignments Table

Column	Type	Default	Extra	Comment
CreativeID	Int(11)			
SectionID	Smallint(6)			
Type	enum('Include', 'Exclude', 'Exclusive')	Include		<p>If Type is set to "Include", the creative will run on the section specified (and all sections beneath it in the section tree). If it is set to "Exclude", it will not run on the section specified (or any beneath it), overriding Include assignments made higher up on the tree. If it is set to "Exclusive", it will run on the section specified (and all beneath it), and no other creatives will be allowed to run on those sections.</p> <p>Note that CreativeAssignments override CampaignAssignments.</p>

DailyTargets Table

This table is the master list of all creatives that are active during the current day.

Note that there is an analogous table, SimDailyTargets, that is used during the inventory simulation.

Column	Type	Default	Extra	Comment
 CreativeID	int(11)			
Target	int(11)			The number of impressions this creative should get during the current day.
Weight	int(11)	1		The weight assigned to the creative. This weight is relative to all other active creatives. It only matters for delivery purposes if Target=0.
Remaining	int(11)			The number of impressions remaining to be served. This starts out equal to Target, and is decremented from there.
HoursOfDay	mediumint(8) unsigned	16777215		A bitmask indicating which hours of the day the campaign should run; low bit is hour 0, high bit is hour 23. This value is computed by ANDing Creatives.HoursOfDay with the Campaigns.HoursOfDay.

RunningCreatives Table

This table contains all the CreativeID's of the creatives that have run during a given hour. It is used by the hourly maintenance script to record the deliveries for all creatives active during the past hour. Even if a creative is marked as "Suspended" or "Cancelled" during the hour, its ID will still be in this table, and thus, the hourly maintenance script can still retrieve its deliveries at the end of the hour.

After recording the hourly deliveries, the maintenance script clears RunningCreatives, and then while reloading shared memory, it reloads this table.

Column	Type	Default	Extra	Comment
🔑 CreativeID	int(11)			
🔑 Hour	tinyint(4)			

Invoices Table

Column	Type	Default	Extra	Comment
InvoiceID	int(11)		auto_increment	
CampaignID	int(11)			
InvoiceNumber	char(64)			The invoice number which will show up on the printed invoice. It is built like this: AdvertiserID-CampaignID-YYYYMMDD, where YYYYMMDD is the date the payment is due.
FromDate	date			The beginning of the invoiced period.
ToDate	date			The end of the invoiced period.
InvoiceDate	date			The date the invoice is generated.
DueDate	date			The date the invoice is due to be paid. This is calculated by adding the NetDue preference value to the InvoiceDate.
ImpressionsDelivered	int(11)			Total number of impressions delivered during the invoice period.
ClicksDelivered	int(11)			Total number of clickthroughs delivered during the invoice period.
CPM	float(10,2)			The actual CPM used during the invoice period.
CPC	float(10,2)			The actual CPC used during the invoice period.
Fixed	float(10,2)			The fixed charge for the campaign.
AgencyCommission	float(10,2)			The agency commission rate used during this invoice period.
CPMCharge	float(10,2)			The actual CPM charges: CPM * ImpressionsDelivered.
CPCCharge	float(10,2)			The actual CPC charges: CPC * ClicksDelivered.
FixedCharge	float(10,2)			The fixed charge associated with this invoice period.
AgencyCommissionCharge	float(10,2)			The actual agency commission: (FixedCharge + CPMCharge + CPCCharge) * AgencyCommission
PurchaseOrder	char(64)			The PO number (inherited from the Campaign)
Sent	enum('Y', 'N')	N		Once an invoice has been marked as sent, this is set to "Y".
Paid	enum('Y', 'N')	N		Once an invoice has been marked as paid, this is set to "Y".

HourlyStats Table

Column	Type	Default	Extra	Comment
Day	date	0000-00-00		
Hour	tinyint(4)			
SectionID	smallint(6)			
CreativeID	int(11)			
Impressions	int(11)			
Clicks	int(11)			
ImpressionErrors	int(11)			
ClickErrors	int(11)			

CampaignDailyStats Table

Column	Type	Default	Extra	Comment
Day	date	0000-00-00		
CampaignID	int(11)			
Impressions	int(11)			
Clicks	int(11)			
ImpressionErrors	int(11)			
ClickErrors	int(11)			

Delivery Table

This table stores the user IDs and IP addresses of visitors as they view ad banners on the various sections of your site. If a user clicks on an ad banner, this table is used to look up the last-seen creative so that the appropriate clickthrough can be delivered.

For more on why this is done using a heap table (and not using shared memory or other techniques), see [Delivery Table Design History](#).

Column	Type	Default	Extra	Comment
IDString	char(25)			
CreativeID	int(11)			
LastSeen	timestamp(14)			This is used by the minutely maintenance script to clean up old entries in the table. This column is not indexed. While indexing it would improve the speed with which the cleanup could be performed, it would slow down insertions and use more space, both of which would outweigh the benefits to the maintenance code.


SectionDailyTraffic Table

This table is used to store just the impressions that are recorded for each section each day. The Impression number is actually the sum of the recorded Impressions and ImpressionErrors, since this table is really a measure of demand for each section.

Note that there is an analogous table, SimSectionDailyTraffic, that is used during the inventory simulation. Projected traffic numbers are written to that table.

Column	Type	Default	Extra	Comment
Day	date	0000-00-00		
SectionID	int(11)			
Width	smallint(5) unsigned			
Height	smallint(5) unsigned			
Impressions	int(11)			

Users Table

Column	Type	Default	Extra	Comment
 Login	char(32)			
Password	char(32)			
FirstName	char(64)			
LastName	char(64)			
EmailAddress	char(255)			
Campaigns	enum('Y', 'N')	N		Can the user access the Campaign management interface?
Advertisers	enum('Y', 'N')	N		Can the user access the Advertiser management interface?
Sections	enum('Y', 'N')	N		Can the user access the Section management interface?
Reports	enum('Y', 'N')	Y		Can the user access the Report interface?
Admin	enum('Y', 'N')	N		Can the user access the Admin interface?
CampaignInsertion	enum('Y', 'N')	Y		Can the user access the Campaign Insertion interface?
Invoicing	enum('Y', 'N')	N		Can the user access the Invoicing interface?
LimitedCampaigns	enum('Y', 'N')	N		Can the user get limited access to campaigns?

CampaignAccess Table

This table determines which campaigns are available to users who have "LimitedCampaigns" access.

Column	Type	Default	Extra	Comment
🔑 CampaignID	int(11)			
🔑 Login	char(32)			

TrafficProfile Table

There should be 24 records in this table, one for each hour 0 through 23. It should be noted that the pageview values entered for each hour are used in a relative fashion to determine the percentage of traffic that runs at each hour. All you really have to do is enter the traffic numbers from a fairly representative day.

Column	Type	Default	Extra	Comment
Hour	int(11)			
Pageviews	int(11)			

MaxSizes Table


For each dimension of creative you would like to be able to insert into the system, you must enter the maximum size (in bytes) of creatives of that dimension.

Whenever new creatives are uploaded, the software checks against these values to determine whether to accept the creative. If there is no value in this table, the creative will be rejected. If the uploaded creative exceeds the value in this table, the creative will be rejected.

Column	Type	Default	Extra	Comment
Width	int(11)			
Height	int(11)			
Size	int(11)			
Name	char(64)			

OASISPrefs Table

This table is used to store a set of preference variable/value pairs. Those pairs are detailed in [Preferences](#).

Column	Type	Default	Extra	Comment
 PrefKey	varchar(32)			
PrefValue	text			

Tips

Watch your user

DO NOT run the hourly script as anybody but the user who will be running the cron jobs! This will result in shared memory segments being created with the wrong ownership. It's possible then that the cron jobs will not be able to clean out the shared memory (A Bad Thing).

Be careful with DaysOfWeek and HoursOfDay

You can get in a lot of trouble if you try to specify different days of the week for a campaign and its creatives. For example, suppose you set up a campaign to run M–F. You put in a creative for Tu,Th. The campaign runs for one week, at 100,000 impressions. `daily_maint.php` will determine that the campaign can get 20,000 per day. The creative, however, only runs Tu,Th. On Monday, it will get no impressions. Tuesday, the engine will notice this short and will try to schedule 25,000 for the campaign, which will get assigned to the creative. Wednesday, `daily_maint.php` will schedule 25,000 impressions to the campaign, but the creative will get nothing, and thus the campaign will not run. Thursday, the campaign will get 37,500 impressions, all of which will go to the creative. On Friday, `daily_maint.php` will try to schedule 37,500 impressions to the campaign, but the creative will get nothing, and thus the campaign will not run. Now our campaign is over, and we've come up 37,500 impressions short.

Best practice is to have all your creatives set to the defaults and control your days/hours at the campaign level.

If you don't have impression targets, you don't need to worry about this. You could create a campaign with default days/hours, and then have a variety of creatives that run on different days.

Linking directly to creatives

You can link directly to a specific creative, and the impressions and clickthroughs can be tracked. Simply use the `c` CGI parameter to specify the creative number. Note that if you use IMG tagging, you'll have to also specify the `l` argument (that's a lowercase "L").

You may wish to create a special section that you can use for such ads, so that you'll know that the traffic to those creatives came from direct links.

For example:

```
<A HREF="http://your.server.name/oasisc.php?c=27">IMG  
SRC="http://your.server.name/oasisi.php?c=27" BORDER=0 ALT="My Creative"></A>
```

This example will run creative 27, and any impressions or clicks will be logged to section 52. The `l=1` parameter makes sure that `oasisi.php` will log the impression (by default, it does not log impressions with the `c` parameter, because these URLs are usually generated by the embedded impression scripts, in which case the impression has already been logged).

When using `oasisi-e.php`, you can use the optional 5th argument to `get_creative()` to specify the creative id.

Note that if you link directly to creatives, you should not schedule the creatives for specific impression numbers, since the delivery engine will not have good control over how many times the creative gets delivered.

About clickthrough errors

If you're using IMG tagging, you'll notice in the reports and log files that there will be a certain number of clickthrough errors. This is to be expected. You will see clickthrough errors whenever a spider hits your site and follows the clickthrough link on an ad banner. Unfortunately, since clickthrough rates are generally low, these clickthrough errors often represent a large portion of the total clicks.

If you are not comfortable with the clickthrough error rates you're seeing, you might want to sift through the log files yourself to try to verify that these are legitimate errors:

- look for accesses to the clickthrough URL without a preceding access to the impression URL.
- look for obvious spider user agents

More about clickthrough errors

When a client presents a cookie to the clickthrough engine, it tries to look the cookie up in the delivery table. If it fails, it then falls back to the IP address. You might wonder how you could get a cookie from the client but not be able to find an entry in the delivery table. The first explanation is obvious; if a client views an ad banner and then waits so long to click through that the entry has already been cleared from the delivery table (ClickthroughWindow preference setting).

The second explanation is not so obvious. When ad tags for two different sections (let's say sections X and Y) appear on one page, the client may request the creatives for both in parallel. Both requests come in without cookies, so the impression engine hands out two different cookies. Only the second cookie received (let's say the one given out with the ad for section Y) is kept by the client. When the clickthrough comes in for section X, the cookie is presented. However, it was not the one recorded in the delivery table for section X. Thankfully, unless the user is behind a very busy proxy server, the fallback to the IP address lookup will generally result in the right clickthrough. It's also worth noting that this situation can only happen the very first time somebody comes to your ad server (or whenever he clears his cookie table) and he clicks on one of the first ads he sees. Presumably this will be a fairly rare situation.

Last hour of the day

If your site's traffic profile dips at night to low levels, you might want to take advantage of that in entering your traffic profile numbers. You can enter 0 for hour 23, and use that hour entirely for making up any shortfalls during the other hours of the day. If all goes well, none of the campaigns with impression targets will be scheduled during that hour, but in the off chance that there is a shortfall in hour 22, you'll have hour 23 to make up the difference.

This strategy also reduces the chance that you might have an hour 23 shortfall on the last day of a campaign and come up short for the entire campaign.

Campaign/Creative Weights

Campaign weights are relative to other campaigns. Creative weights are relative to the other creatives within the same campaign. The final weight that a creative gets when it is scheduled is

Final Weight = Campaign Weight * (Creative Weight / Sum of all Creative Weights in Campaign) * 100

This formula preserves the overall weight of the campaign when the creatives are scheduled. Here's an example:

Campaign, Creative Weights

Campaign A: 10
 Campaign A, Creative 1: 20
 Campaign A, Creative 2: 5

Campaign B: 20
 Campaign B, Creative 3: 10

Final Weights

Creative 1: $10 * (20 / 25) * 100 = 800$
 Creative 2: $10 * (5 / 25) * 100 = 200$
 Creative 3: $20 * (10 / 10) * 100 = 2000$

Now the ratio of Creative 1 to Creative 2 is still 4:1. The ratio of Campaign A to Campaign B is still 1:2 (800 + 200 for Campaign A and 2000 for Campaign B).

This weighting works very well if all the creatives are assigned to the same section(s). But one scenario in which this weighting can cause some difficulty is if you have one campaign with a single creative running on many sections and another campaign with many creatives each running on one section. If you want to balance the two campaigns so that each gets roughly the same number of impressions, you may find that you have to make some adjustments. Here's an example: ***Campaign, Creative Weights***

Campaign A: 10
 Campaign A, Creative 1: 10
 Campaign A, Creative 2: 10
 Campaign A, Creative 3: 10
 Campaign A, Creative 4: 10
 Campaign A, Creative 5: 10

Campaign B: 10
 Campaign B, Creative 6: 10

Final Weights

Creative 1: $10 * (10 / 50) * 100 = 200$
 Creative 2: $10 * (10 / 50) * 100 = 200$
 Creative 3: $10 * (10 / 50) * 100 = 200$
 Creative 4: $10 * (10 / 50) * 100 = 200$
 Creative 5: $10 * (10 / 50) * 100 = 200$
 Creative 6: $10 * (10 / 10) * 100 = 1000$

Now suppose that creatives 1–5 each run on a single section 1–5, respectively. Creative 6 runs on all 5

sections. Since the two campaigns have equal weights, you might expect their creatives to run with the same frequency. But they won't. Creative 6 will run 5 times as often as the other combined. When the delivery engine makes its decision as to which creative to run, it compares the weights of all creatives assigned to run on the given section. In each case, it will be comparing a creative with weight 200 to one with a weight of 1000. Creative 6 will win $5/6$ ($1000/1200$) times.

To balance the campaigns more evenly, you might want to compensate so that Campaign A gets a weight of 50 (multiply the original campaign weight by the number of creatives).

Note that this method gets considerably more complex if you schedule the creatives for overlapping sections (or if the sections covered by Campaign A are not the same as those for Campaign B). Reliable balancing may be impossible in such cases.

Importing Campaigns in Progress

If you are setting up campaigns that are currently running on another ad server, you may need to do some tweaking in the database to get the campaigns to look right on an invoice. This advice really only applies if the campaign has a non-zero Impressions Guaranteed value.

Suppose you have a six-month campaign that gets 100,000 impressions per month running on some other ad server. Halfway through the campaign, you want to move the campaign from the old ad server to OASIS. You should set up the campaign *exactly* like it appears on the old server (with the original start/end dates and impression target). Don't make the campaign active in OASIS yet. You then need to figure out exactly how many impressions have been delivered thus far on the old server. Get the CampaignID for the OASIS campaign (you can see it in the URL on the campaign edit page). Then go into MySQL and run this query on the oasis database:

```
update Campaigns set ImpressionsDelivered=300000 where CampaignID=36
```

(Of course, you'll have a different CampaignID and impression number). You'll also need to do this for a creative in the campaign. If you only have one creative in the campaign, you can do it quite easily:

```
update Creatives set ImpressionsDelivered=300000 where CampaignID=36
```

Otherwise, you'll need to have the CreativeIDs of the creatives. You can pick one of the creatives and assign all the impressions to that creative. (If you have specific Impressions Guaranteed values for creatives in the campaign, you'll need to be judicious about which creative you give the impressions to, or maybe you can get actual breakdowns from your old server).

If by some chance, you have to do this on an active campaign, you can still do it, but keep in mind that ImpressionsDelivered may not be zero anymore (and the hourly maintenance script might need to write to this record, so you have to be careful when you do this; it's best to avoid the minutes right before and after the top of the hour). The query for an active campaign would be this:

```
update Campaigns set ImpressionsDelivered=ImpressionsDelivered+300000 where CampaignID=36
```

Be careful with Exclusives

Your best bet if you are using exclusive assignments is to use it with campaigns that do not have impression targets. There are two types of problems that can occur if you use exclusive assignments for

campaigns with impression targets.

First, your campaign may need more impressions than can be delivered by the section to which you assigned it exclusively. You can compensate for this by assigning the campaign to other sections in addition to the exclusive assignment.

Second, the section may get more impressions than the campaign needs. When the campaign hits its hourly target, blank ads will be served. This problem may be compounded if you've assigned the campaign to other sections, as some of its hourly target impressions will be delivered on the other sections, leaving even fewer for the exclusive assignment. A workaround for this situation is to assign another campaign (perhaps a house campaign) with no impression target to the section as exclusive. Both campaigns will run on the section (of course, the campaign with an impression target will get its impressions first). This won't be a true "exclusive" for either campaign, but it will avoid having blank banners run.

Stopping MySQL

In general, you don't want to stop MySQL while you're live. But sometimes a system administrator may find it necessary to do so.

Do **NOT** stop it while one of the maintenance scripts is running. This will cause you to lose an hour's worth of stats and wreak havoc on the scheduler, among other things.

If you stop MySQL and you're using IMG tagging to deliver your banners, you will experience some problems. Banners will continue to be delivered, but they won't go into the Delivery table, so if users try to click through, they won't get redirected properly.

Note that since the Delivery table is stored in RAM, when you restart MySQL, it will have a completely cleaned out Delivery table.

If you're not using IMG tagging to deliver banners, you won't have any problems, since it does not depend on the Delivery table.

Tips

Troubleshooting

Shared Memory Errors

A number of people have reported that they aren't seeing banners, even though they have set up sections and creatives (and assigned campaigns/creatives to the sections!). When they look at the "Hourly Assignments" admin page, they get an error like this:

```
Warning: shm_attach() failed for key 0x4f415300: memorysize too small in /home/ads/www/oasis/mgmt/admin.
```

or you might see this error when running `hourly_maint.php`:

```
Error clearing shared memory segment OAS0
```

This indicates that the shared memory segment holding the hourly assignments was not created properly by the `hourly_maint.php` script.

You can verify this by typing "ipcs" at the command prompt. You will see a list of shared memory segments, their sizes, owners, permissions, and their keys. If none has a key of "0x4f415300" then you know something has gone wrong.

Either you never ran `hourly_maint.php` (not likely, since `install.php` tries to do it for you), or something went wrong when you did.

It is important to note that the first time `hourly_maint.php` is run, it needs to get the `start` option:

```
hourly_maint.php start
```

Another thing that you *must* ensure is that the maintenance scripts are always run by the Web user (the user as which your Web server runs). If any of the shared memory segments are created by another user (especially root), you'll never get off the ground.

Use `ipcs` to check the ownership of your shared memory segments. If any are owned by the wrong user, use `ipcrm` to remove all of OASIS' shared memory segments (and the semaphore as well). You can identify them easily, since all have keys that start with "0x4f41". Once you've cleared them out, run `hourly_maint.php start`. Now run `ipcs` again. You should have nine shared memory segments, all owned by the right user.

register_argv_argc set incorrectly in php.ini

If your `php.ini` has

```
register_argv_argc = Off;
```

the maintenance scripts will be unable to get their arguments, which will lead to incorrect behavior.

Errors running hourly_maint.php

The most common problem with `hourly_maint.php` is that it is run for the first time without the `start` argument. Be especially careful when running it with `su`

```
su nobody -c /path/to/hourly_maint.php start
```

will not work. The system will pass "start" as an argument to `su`, not to `hourly_maint.php`. Instead, do this:

```
su nobody -c '/path/to/hourly_maint.php start'
```

Of course, use the appropriate username and path for your system!

Banners working for IMG tags, but not for embedded or IFRAME/ILAYERS

At install time, if you forget a trailing slash (or otherwise mis-define the URL) when you define `oasis_url` in your `oasis.cfg`, `oasisi-i.php` and `oasisi-e.php` will generate bad URLs for `oasisi.php` and `oasisc.php`.

To fix it, manually edit `oasisi-i.php` and `oasisi-e.php` to correct the bad URLs.

Cookie Problems

If OASIS runs on a machine that has no hostname, the cookie that is sent to browsers will incorrectly specify its domain and will not be returned by browsers. Thus, users may not click through to the right URL if you're using IMG tagging (they might click through correctly based on their IP addresses, but this is not reliable for hosts that share an IP address, like those behind a NAT device).

This must be fixed in three places: `oasisi-e.php`, `oasisi-i.php`, and `oasisi.php`. Change

```
setcookie("OASISID", $id, time() + 157680000, "/", ".yourdomain.com");
```

to

```
setcookie("OASISID", $id, time() + 157680000, "/", "");
```


Appendix: Delivery Table Design History

I've tried a number of different ways to store the delivery table: shared memory, a dbm file on a ramdisk, and a MySQL heap table. The shared memory did not work, because PHP's shared memory manager is a bit too simplistic. It uses a flat linked list to manage the variables you've put into shared memory. Once you get over a couple thousand variables, it grinds to a halt. In addition, when you store a variable at a key that is already in use, the shared memory manager relocates everything that is stored after that key to make room for your new variable. Imagine if you've got 20 MB of data in shared memory, and you want to change the variable located at key #1!

The dbm file idea didn't get very far. It was too slow, and I didn't want to waste any more time trying to figure out why.

The heap table in MySQL rocks! I was able to insert 200,000 records into it (that roughly represents 100,000 unique visitors) in 81 seconds (0.0008 seconds per insertion, which in my mind is fantastic). The resulting table occupied 10.3 MB (that's the $1024^{**}2$ kind of MB, not $1000^{**}2$). This suggests that if you want to use no more than 32 MB for your delivery table, you could support approximately 300,000 unique visitors. If you clean out the delivery table every 15 minutes, you could conceivably handle 1.2 million unique visitors per hour.

Of course, as the number of sections that each visitor views grows, the number of unique visitors you can handle goes down. If each visitor sees on average 3 different sections, you'll only be able to handle 100,000 in 15 minutes.

To complicate matters further, users behind proxy servers will require roughly half the storage, because they share IP addresses. Users not accepting cookies will require more storage, because each time they view a page, we'll record a new ID.

