

Performance

The Art and Science of Tuning a Large Perl Application

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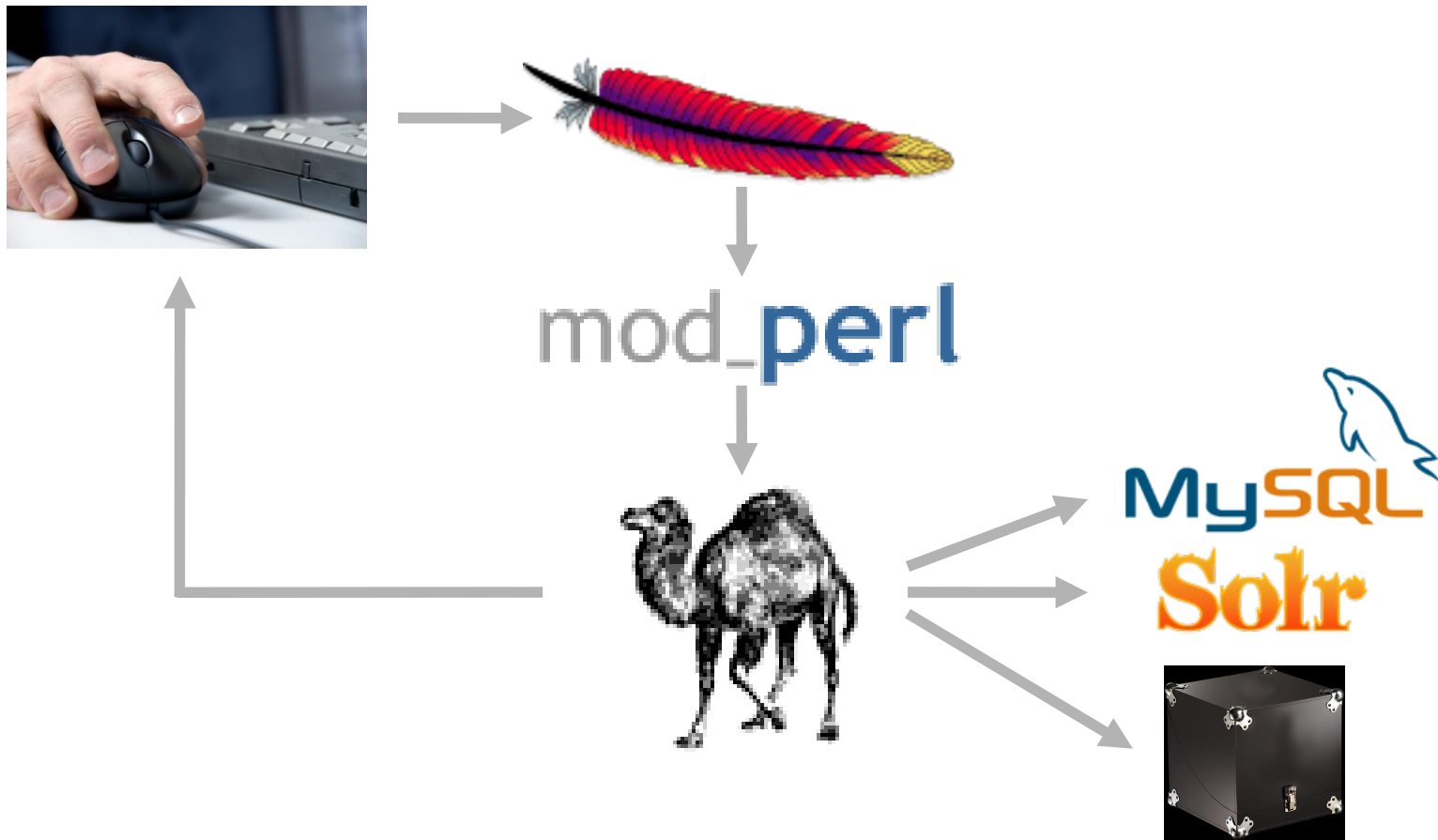
On Premature Optimization

- Premature optimization is the root of all evil...
- The ability to accurately determine what is premature separates *great* developers from *merely capable* ones

Profiling - It's About Time

- Profiling measures code behavior
 - subroutine call frequency
 - subroutine call duration
- How our code spends its time
- Understanding this makes you great

It's About Time



What is in a Profile?

- A profile is just a bunch of statistics
 - % time overall in `subroutine`
 - total time *in* `subroutine`
 - total time *from* `subroutine`
 - number of calls to `subroutine`
- Looking at profiling numbers *can* give a clue where code bottlenecks are
- More art than science

About Ticketmaster

- Ticketmaster Online:
 - `ticketmaster.com`
 - `ticketmaster.(uk|au|nz|it|de|es)`
 - 2008 Olympics
 - point of sale
- Large Perl shop
 - 400,000 lines of Perl
 - 1700 classes
 - and growing

I Don't Know About You

- 400,000 lines is a lot of code
- I'd rather face a legion of Persian soldiers (and certain doom) than figure out where the "slow" code is

Come Back With Your Shield Or On It

- Profiling - a battle of courage
 - `Devel::DProf`
 - `Apache::DProf`
- Eventually, you gave up



Profiling in 3 Easy Steps...

- **Enable** `Devel::Profiler`
- Click around in your browser
- Analyze results

Step 1 - Enable Profiling

- This used to be quite painful
- `Devel::Profiler` rocks
- Two simple configuration files
 - `profiling.conf`
 - `profiling_startup.pl`
- Enable with a single line in `httpd.conf`
 - `Include conf/profiling.conf`
- That's all!

profiling.conf

- Adds all kinds of magic
 - httpd (re)configuration
 - special URL targets
 - **loads** `profiling_startup.pl`

profiling_startup.pl

- **More magic**

- `Devel::Profiler` load and configuration
- `Perl*Handler` definitions

profiling.conf

```
MinSpareServers      1
MaxSpareServers      1
StartServers         1
MaxClients           1
MaxRequestsPerChild  0
```

```
LogLevel    warn
PerlWarn    Off
```

```
PerlRequire conf/profiling_startup.pl
```

```
<Location /finish_profile>
    SetHandler perl-script
    PerlHandler Profiling::ChildTerminate
</Location>
```


Devel::Profiler

- A pure Perl profiler
 - "how long is `$code` taking"
- Drop-in replacement for `Devel::DProf`
 - except it actually works
- Available on CPAN
- Better from SourceForge

<http://sourceforge.net/projects/devel-profiler/>

Devel::Profiler::Plugins::Template

- **Includes** Template::Toolkit **calls in** profile
 - PROCESS
 - INCLUDE
- **Available on CPAN**

profiling_startup.pl

```
if ($ENV{DO_PROFILE}) {

    require Devel::Profiler::Plugins::Template;
    require Devel::Profiler;
    require Devel::Profiler::Apache;

    our $output_dir = "/tmp/dprof";

    Devel::Profiler::Apache->import(
        bad_pkgs    => [qw( Profiling UNIVERSAL Time::HiRes B Carp
                           Exporter Cwd Config CORE DynaLoader XSLoader
                           AutoLoader utf8 Template::Stash::XS Template::Config
                           Template::Context Template::Document
                           DBD::_::st DBD::_::db DBD::st DBD::db
                           DBI::st DBI::db DBI::dr HTTP::Message
                           TMCS::Exception TMCS::Util::Log
                           TMCS::Util::KeyRing TMCS::Util::Ingrian)],
        bad_subs    => [qw(TMCS::Model::view TMCS::Util::MAC::dzs_decode),
                        'BigTime::(0+)],
        output_dir => $output_dir,
    );
}
else {
    print STDERR 'profiling enabled but no $ENV{DO_PROFILE}?', "\n";
}
```

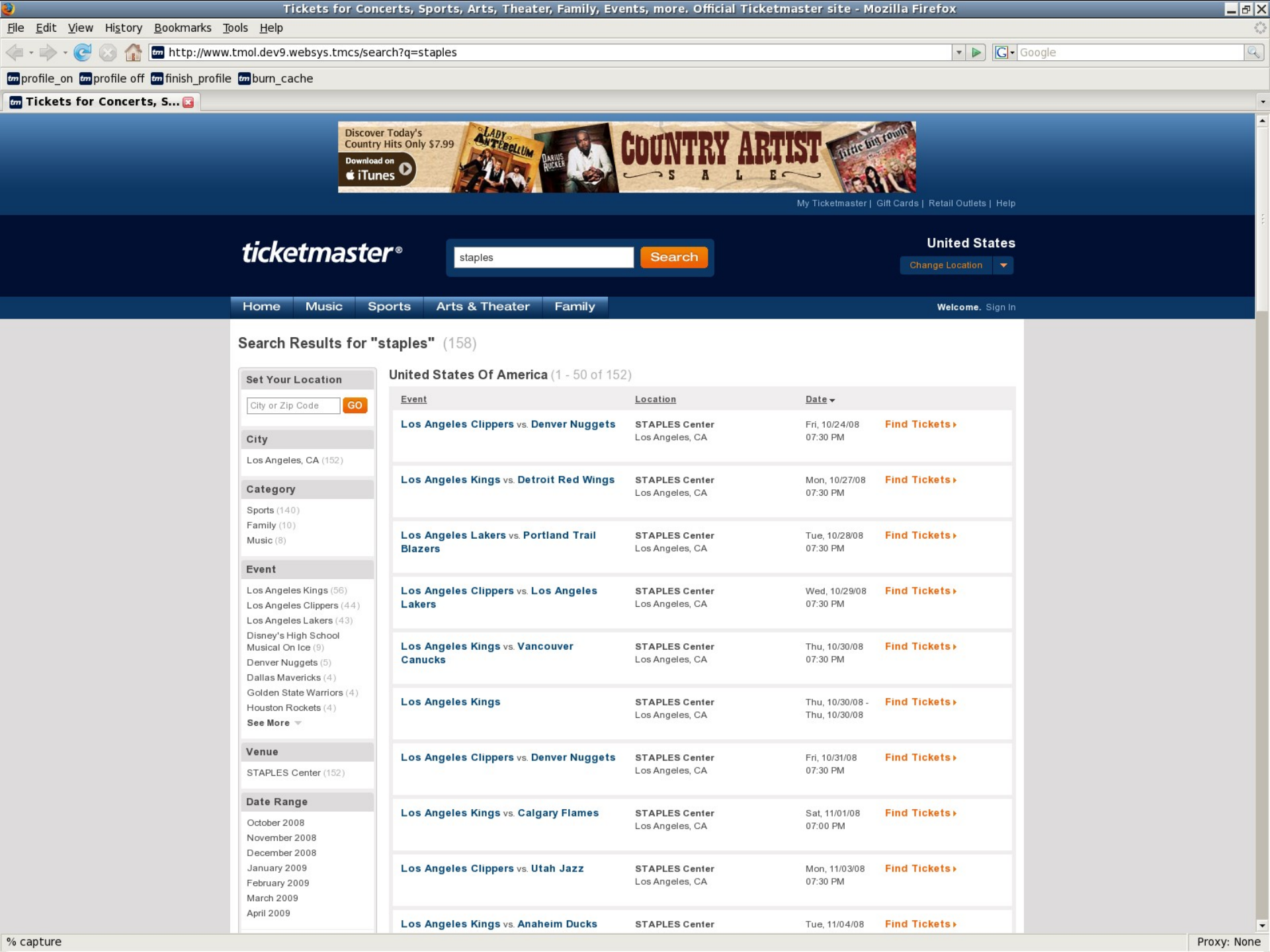

profiling_startup.pl

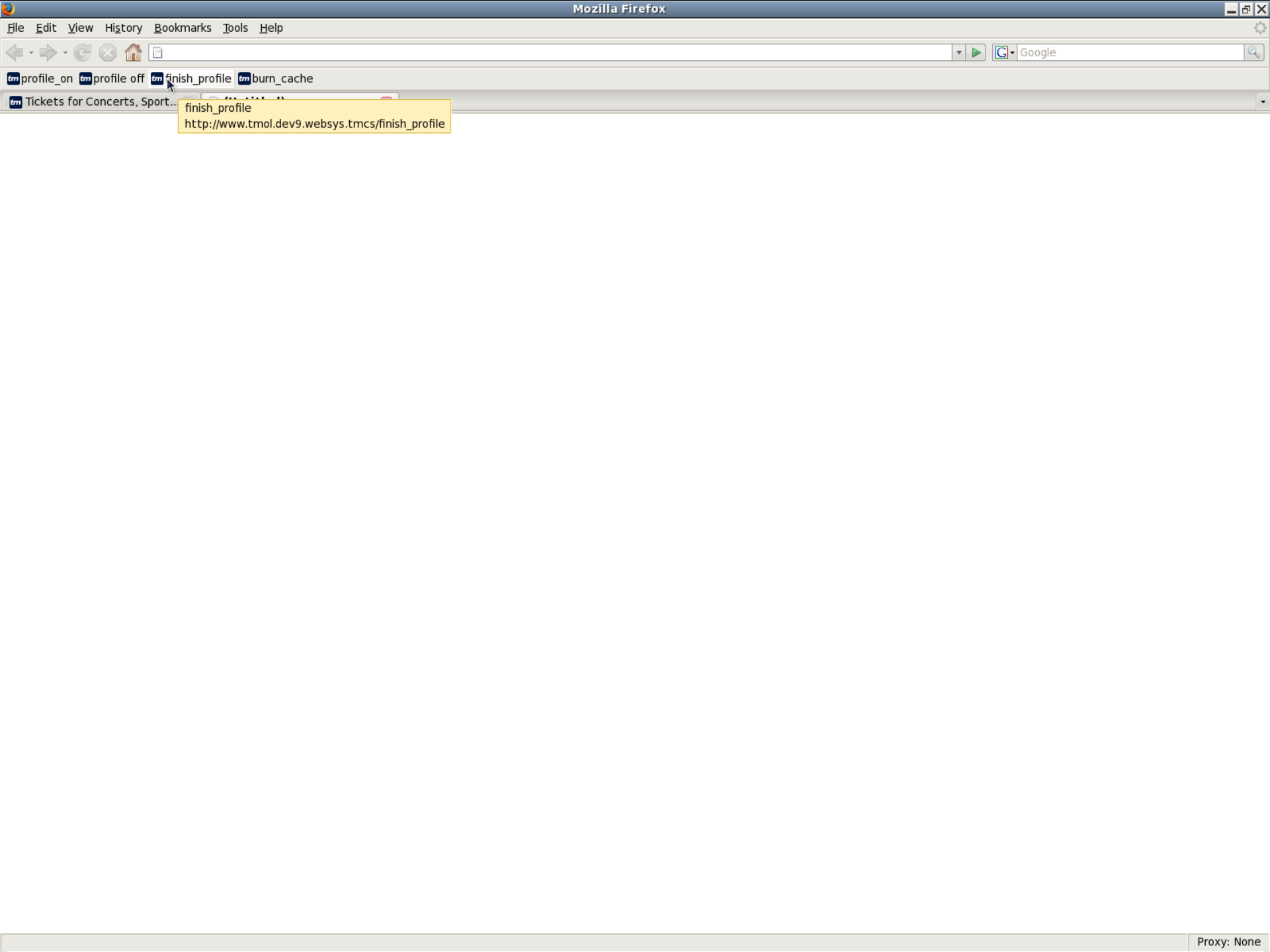
```
# <Location /finish_profile>
#   SetHandler perl-script
#   PerlHandler Profiling::ChildTerminate
# </Location>

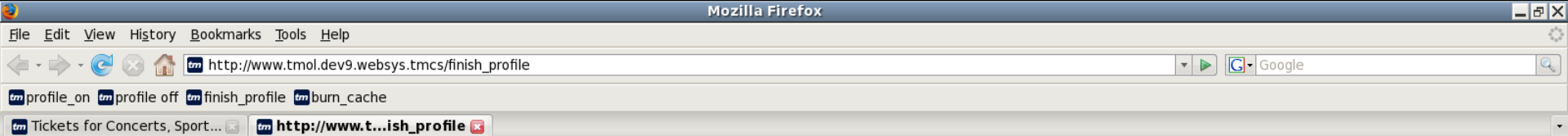
sub Profiling::ChildTerminate::handler {
    my $r = shift;
    our $output_dir;
    $r->send_http_header('text/plain');
    $r->print(join '/', $output_dir, $$, 'tmon.out');
    $r->child_terminate;
    0;
}
```


Profiling in 3 Easy Steps...

- **Enable** `Devel::Profiler`
- Click around in your browser







/app/local/logs/dprof/5782/tmon.out

Where's the Data?

- In a file called `tmon.out...`
- generated by `Devel::Profiler...`
- called by `Devel::Profiler::Apache...`
- which gathers data *for each child...*
- and holds it until child exit

So...

- All requests need to go to the same child process
- That process must die before data can be analyzed
- Enter `profiling.conf` magic

profiling.conf

- **Configures** `httpd` to run only one child

```
MinSpareServers      1
MaxSpareServers      1
StartServers         1
MaxClients            1
MaxRequestsPerChild  0
```

- **Generates useful URLs**
- `/finish_profile`
 - terminates the current child process
 - **forces** `tmon.out` generation

Profiling in 3 Easy Steps...

- **Enable** `Devel::Profiler`
- Click around in your browser
- Prove your worth


```
[geoff]$ dprofpp -o 25 /app/local/logs/dprof/5782/tmon.out
```

```
Total Elapsed Time = 118.0792 Seconds
```

```
User+System Time = 15.98828 Seconds
```

```
Exclusive Times
```

%Time	ExclSec	CumulS	#Calls	sec/call	Csec/c	Name
13.3	2.140	3.039	28	0.0764	0.1086	Template::Parser::_parse
11.9	1.903	2.968	28	0.0679	0.1060	Template::Parser::split_text
6.61	1.057	1.066	3059	0.0003	0.0003	Template::Parser::tokenise_directive
5.91	0.945	1.512	32	0.0295	0.0473	TMCS::Model::Lookup::load
3.35	0.536	0.536	12	0.0447	0.0447	JSON::XS::encode
2.94	0.470	6.588	28	0.0168	0.2353	Template::Provider::_compile
2.05	0.327	0.327	9596	0.0000	0.0000	Encode::_utf8_on
1.91	0.306	0.306	10	0.0306	0.0306	Compress::Zlib::deflateStream::deflate
1.71	0.273	5.189	3	0.0911	1.7297	Search::Model::JSON::Event::post_process
1.70	0.272	1.316	227	0.0012	0.0058	TM::Model::Genres::load
1.27	0.203	0.203	1966	0.0001	0.0001	TM::Model::Genres::Leaf::traverse
1.16	0.186	0.206	1824	0.0001	0.0001	Search::Model::JSON::truth
1.16	0.185	0.185	3134	0.0001	0.0001	TMCS::Model::_set
1.12	0.179	0.179	4019	0.0000	0.0000	DBD::mysql::st::fetch
0.97	0.155	2.298	227	0.0007	0.0101	TM::Model::Genres::Leaf::load
0.89	0.143	0.453	629	0.0002	0.0007	BigTime::GregorianCalendar::strftime
0.88	0.140	0.149	1503	0.0001	0.0001	TMCS::Cache::stringify
0.87	0.139	0.139	1761	0.0001	0.0001	Template::Directive::text
0.86	0.138	0.138	2898	0.0000	0.0000	Template::Directive::ident
0.86	0.138	0.138	695	0.0002	0.0002	DBD::mysql::st::execute
0.86	0.138	0.256	1524	0.0001	0.0002	TMCS::Cache::should_cache
0.84	0.134	0.134	25	0.0054	0.0054	Storable::net_mstore
0.74	0.119	0.119	1640	0.0001	0.0001	TMCS::Cache::get_cache_settings
0.71	0.113	0.252	49	0.0023	0.0052	TMCS::Cache::HTTP::_do_http_req
0.69	0.111	0.239	466	0.0002	0.0005	TMCS::Service::DB::connect

```
[geoff]$
```



```
[tmweb@tls1.tmol.dev9 ~]$ dprofpp /tls/local/logs/dprof/29171/tmon.out
```

```
Total Elapsed Time = 226.6202 Seconds
```

```
  User+System Time = 154.8712 Seconds
```

Exclusive Times

%Time	ExclSec	Cumuls	#Calls	sec/call	Csec/c	Name
37.7	58.52	122.93	2269	0.0258	0.0542	TMCS::Model::Lookup::load
19.0	29.44	29.440	614273	0.0000	0.0000	DBD::mysql::st::fetch
17.3	26.83	26.836	614273	0.0000	0.0000	DBI::st::fetch
3.12	4.835	4.835	6041	0.0008	0.0008	DBD::mysql::st::execute
1.15	1.777	2.235	1	1.7767	2.2348	TMCS::Control::process_template
1.11	1.722	121.98	750	0.0023	0.1627	TM::Model::BrandKey::Token::view
1.10	1.703	9.500	3021	0.0006	0.0031	TM::Model::BrandKey::load_bulk
0.84	1.303	3.284	5287	0.0002	0.0006	TMCS::Service::DB::connect
0.81	1.255	1.255	16577	0.0001	0.0001	TMCS::Model::_recurse_attribs
0.60	0.927	4.930	5287	0.0002	0.0009	TMCS::Service::DB::new
0.44	0.685	1.888	6041	0.0001	0.0003	DBD::_::db::prepare_cached
0.41	0.641	17.202	1	0.6411	17.202	TMTools::Model::Brand::load_bulk
0.40	0.612	126.79	755	0.0008	0.1679	TM::Model::Brand::view
0.39	0.604	0.604	9086	0.0001	0.0001	DBD::_::st::bind_col
0.38	0.585	0.585	11327	0.0001	0.0001	DBD::mysql::db::FETCH

```
[tmweb@tls1.tmol.dev9 ~]$
```



```
[tmweb@tls1.tmol.dev9 ~]$ dprofpp /tls/local/logs/dprof/28995/tmon.out
```

```
Total Elapsed Time = 71.19208 Seconds
```

```
  User+System Time = 27.33608 Seconds
```

Exclusive Times

%Time	ExclSec	Cumuls	#Calls	sec/call	Csec/c	Name
6.73	1.840	2.437	1	1.8403	2.4369	TMCS::Control::process_template
5.38	1.471	1.471	16633	0.0001	0.0001	TMCS::Model::_recurse_attribs
5.35	1.462	9.062	3021	0.0005	0.0030	TM::Model::BrandKey::load_bulk
3.72	1.018	2.660	4543	0.0002	0.0006	TMCS::Service::DB::connect
3.16	0.863	3.940	4543	0.0002	0.0009	TMCS::Service::DB::new
3.08	0.843	0.843	5297	0.0002	0.0002	DBD::mysql::st::execute
2.92	0.799	1.859	5297	0.0002	0.0004	DBD::_::db::prepare_cached
2.30	0.630	16.917	1	0.6299	16.916	TMTools::Model::Brand::load_bulk
2.07	0.566	1.084	2726	0.0002	0.0004	BigTime::GregorianCalendar::mktime
1.93	0.528	1.999	3765	0.0001	0.0005	TMCS::Model::new
1.93	0.527	0.527	9839	0.0001	0.0001	DBI::db::FETCH
1.92	0.526	5.835	755	0.0007	0.0077	TM::Model::Brand::view
1.89	0.517	0.517	10265	0.0001	0.0001	DBI::st::fetch
1.82	0.497	0.497	4575	0.0001	0.0001	Class::ISA::self_and_super_path
1.66	0.453	0.453	10265	0.0000	0.0000	DBD::mysql::st::fetch

```
[tmweb@tls1.tmol.dev9 ~]$
```


You Are Not the Highlander

- Sometimes a single request can dig out big time sinks
- Single requests are not representative of overall performance
 - can be very misleading
- The more requests the better




```
[geoff]$ dprofpp -O 21 /app/local/logs/dprof/6346/tmon.out
```

```
Total Elapsed Time = 102.4234 Seconds
```

```
User+System Time = 22.56542 Seconds
```

Exclusive Times

%Time	ExclSec	CumulS	#Calls	sec/call	Csec/c	Name
18.0	4.076	4.076	40	0.1019	0.1019	JSON::XS::encode
7.57	1.709	15.563	12	0.1425	1.2969	Search::Model::JSON::Event::post_p rocess
4.28	0.965	2.946	4238	0.0002	0.0007	BigTime::GregorianCalendar::strfti me
3.91	0.882	1.382	12480	0.0001	0.0001	Search::Model::JSON::truth
2.53	0.570	0.570	10392	0.0001	0.0001	Search::Model::JSON::Event::_uncam el
2.30	0.518	0.518	6400	0.0001	0.0001	TMCS::Model::_recurse_attribs
2.21	0.499	0.499	12448	0.0000	0.0000	TMCS::Model::truth
2.17	0.489	0.489	6184	0.0001	0.0001	POSIX::tzset
2.03	0.459	1.022	4238	0.0001	0.0002	BigTime::GregorianCalendar::_decon struct_time_to_posix
1.98	0.446	2.113	1040	0.0004	0.0020	TM::Model::OnsaleInfo::new
1.87	0.423	0.941	3200	0.0001	0.0003	TMCS::Model::new
1.85	0.418	0.418	8582	0.0000	0.0000	POSIX::setlocale
1.71	0.386	0.988	8368	0.0000	0.0001	Search::Model::JSON::Event::_bigti me
1.65	0.372	0.860	1946	0.0002	0.0004	BigTime::GregorianCalendar::mktime
1.57	0.355	3.301	4234	0.0001	0.0008	TMCS::Util::Template::Plugins::Big Time::format
1.45	0.328	0.516	3426	0.0001	0.0002	TMCS::Cache::get_cache
1.42	0.321	3.622	4234	0.0001	0.0009	Search::Model::JSON::Event::_bigti me_view
1.21	0.274	0.274	4469	0.0001	0.0001	BigTime::new
1.12	0.253	0.454	1040	0.0002	0.0004	Search::Util::Suppressions::suppre ss_wireless_on_onsales
1.07	0.242	0.242	4238	0.0001	0.0001	POSIX::localtime
1.02	0.231	0.593	81	0.0029	0.0073	TMCS::Cache::HTTP::_do_http_req

```
[geoff]$
```


Ticketmaster Architecture



It's the cache, stupid!

profile for:

18 unique searches

(/app/local/logs/dprof/17244/tmon.out)

Total Elapsed Time = 24.183 Seconds

User+System Time = 6.97 Seconds

Exclusive Times

%Time	ExclSec	Cumuls	#Calls	sec/call	Csec/c	Name
8.92	0.622	0.622	16146	0.0000	0.0000	Encode::_utf8_on
8.32	0.580	1.272	18	0.0322	0.0707	TMCS::Control::process_template
5.71	0.398	1.075	72	0.0055	0.0149	TM::Model::Lookup::Markets::new
2.81	0.196	0.629	180	0.0011	0.0035	TMCS::Cache::HTTP::_http_req
2.80	0.195	0.195	1728	0.0001	0.0001	TMCS::Cache::stringify
2.67	0.186	0.280	2047	0.0001	0.0001	TMCS::Cache::get_cache
1.98	0.138	0.275	1741	0.0001	0.0002	TMCS::Cache::MemoryReference::get
1.58	0.110	1.449	162	0.0007	0.0089	TMCS::Service::Search::search
1.35	0.094	0.250	973	0.0001	0.0003	Encode::decode
1.33	0.093	0.111	1135	0.0001	0.0001	Encode::find_encoding
1.32	0.092	0.164	908	0.0001	0.0002	TMCS::Model::_recurse_attribs
1.31	0.091	0.308	684	0.0001	0.0005	TMCS::Control::get_request_data
1.21	0.084	0.084	2129	0.0000	0.0000	TMCS::Language::Hash::FETCH
1.19	0.083	0.173	643	0.0001	0.0003	TMCS::Resource::_get_set_scalar
1.06	0.074	0.074	1548	0.0000	0.0000	TMCS::Service::Search::fallback
1.06	0.074	0.296	162	0.0005	0.0018	TMCS::Service::Search::QueryGen::query_core
1.06	0.074	0.185	162	0.0005	0.0011	TMCS::Service::Search::QueryGen::lookup_search_table
0.92	0.064	0.064	1350	0.0000	0.0000	Encode::is_utf8


```
sub new {
    my $class = shift;
    my $look = $class->SUPER::load();

    my @actives;
    foreach ( @{$look->{data}->{all_records}} ) {
        foreach my $key ( keys(%{$_->{name}}) ) {
            Encode::_utf8_on($_->{name}->{$key});
        }
        push( @actives, $_ );
    }
    $look->{data}->{all_records} = \@actives;

    return $look;
}
```

1.

profile for:

18 unique searches

(/app/local/logs/dprof/16780/tmon.out)

Total Elapsed Time = 14.636 Seconds

User+System Time = 0.419 Seconds

Exclusive Times

%Time	ExclSec	Cumuls	#Calls	sec/call	Csec/c	Name
21.0	0.088	0.127	18	0.0049	0.0071	TMCS::Cache::HTTP::_http_req
6.92	0.029	0.039	108	0.0003	0.0004	IO::Select::_update
6.44	0.027	0.036	18	0.0015	0.0020	TMCS::Control::send_output
4.77	0.020	0.166	18	0.0011	0.0092	TMCS::Cache::get_from_cache
4.53	0.019	0.038	144	0.0001	0.0003	TMCS::Cache::get_cache
4.53	0.019	0.019	126	0.0002	0.0002	TMCS::Cache::Singleton::ApacheRequestMemoryReference::new
4.53	0.019	0.019	108	0.0002	0.0002	TMCS::Cache::stringify
2.39	0.010	0.289	18	0.0006	0.0161	TMCS::Control::run
2.39	0.010	0.010	108	0.0001	0.0001	TMCS::Cache::MemoryReference::get
2.39	0.010	0.039	54	0.0002	0.0007	TMCS::Resource::_get_set_obj
2.39	0.010	0.010	18	0.0006	0.0006	TMCS::Cache::HTTP::_gen_url
2.39	0.010	0.010	108	0.0001	0.0001	IO::Select::_fileno
2.15	0.009	0.009	21	0.0004	0.0004	My::Trans::handler
2.15	0.009	0.038	18	0.0005	0.0021	TMCS::Control::get_cached_cookies
2.15	0.009	0.009	18	0.0005	0.0005	TMCS::Cache::HTTP::_unpack_body
0.00	0.000	0.000	18	0.0000	0.0000	TMCS::Resource::set_current_domain
0.00	0.000	0.019	72	0.0000	0.0003	TMCS::Resource::_get_set_scalar
0.00	0.000	0.000	18	0.0000	0.0000	TMCS::Cache::MemoryReference::new
0.00	0.000	0.019	90	0.0000	0.0002	TMCS::Cache::MemoryReference::set

More Profiling Fun

- `profiling.conf` gives us more URLs
 - `/finish_profile`
 - `/profiling_on`
 - `/profiling_off`
 - `/burn_cache`
- **Implemented** `profiling_startup.pl`

/finish_profile

```
# <Location /finish_profile>
#   SetHandler perl-script
#   PerlHandler Profiling::ChildTerminate
# </Location>

sub Profiling::ChildTerminate::handler {
    my $r = shift;
    our $output_dir;
    $r->send_http_header('text/plain');
    $r->print(join '/', $output_dir, $$, 'tmon.out');
    $r->child_terminate;
    0;
}
```

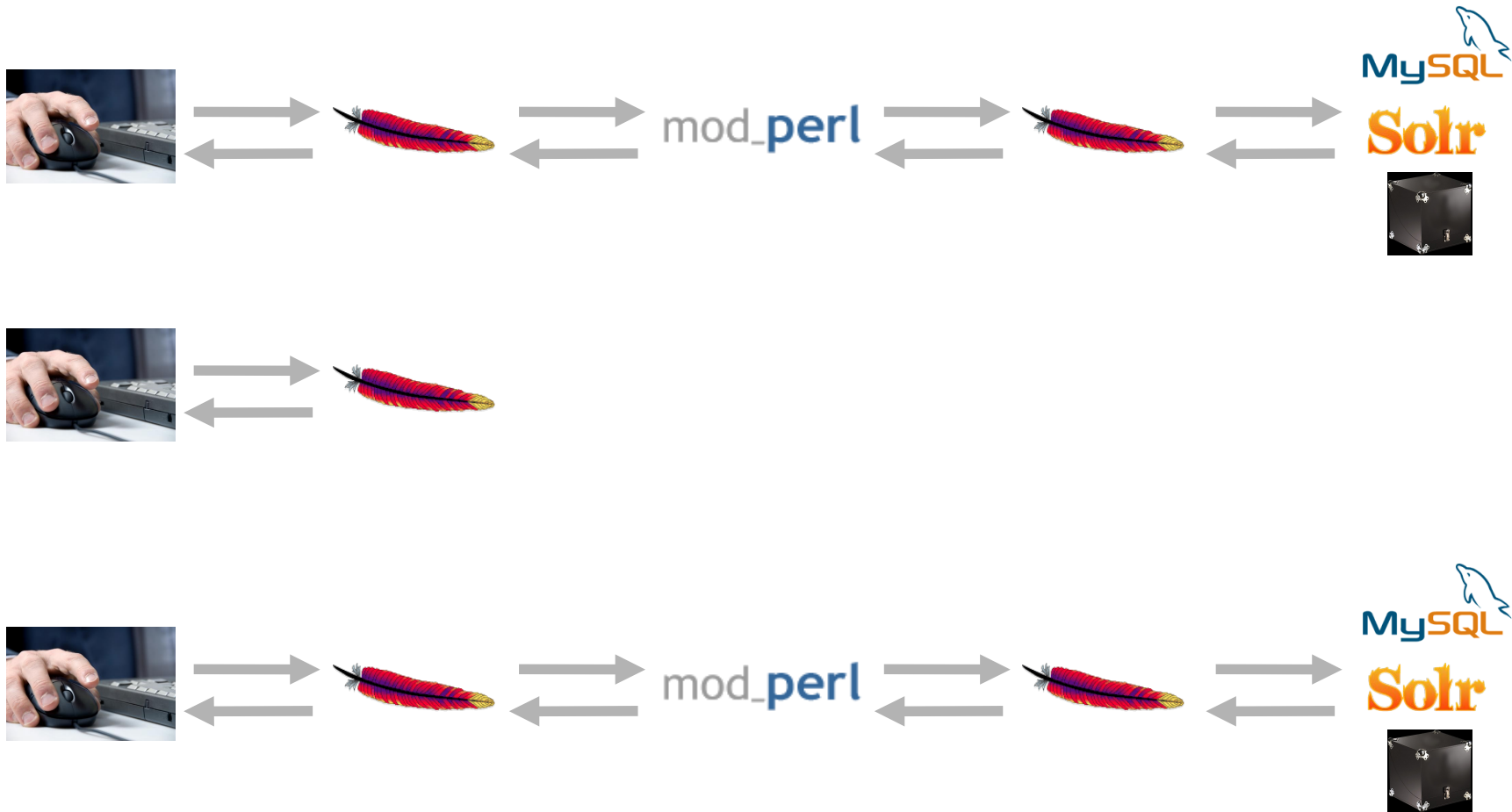

/profile_on

- Default state
- So, why would you need it?

/profile_off

- Selectively toggles collection of profile metrics
- Extremely useful for ignoring one-time activities
 - shared model object building
 - template compilation
 - etc...

Shared Resources



/profile_on

```
# <Location /profile_on>
#   SetHandler perl-script
#   PerlInitHandler Profiling::On
#   PerlHandler Profiling::Status
# </Location>

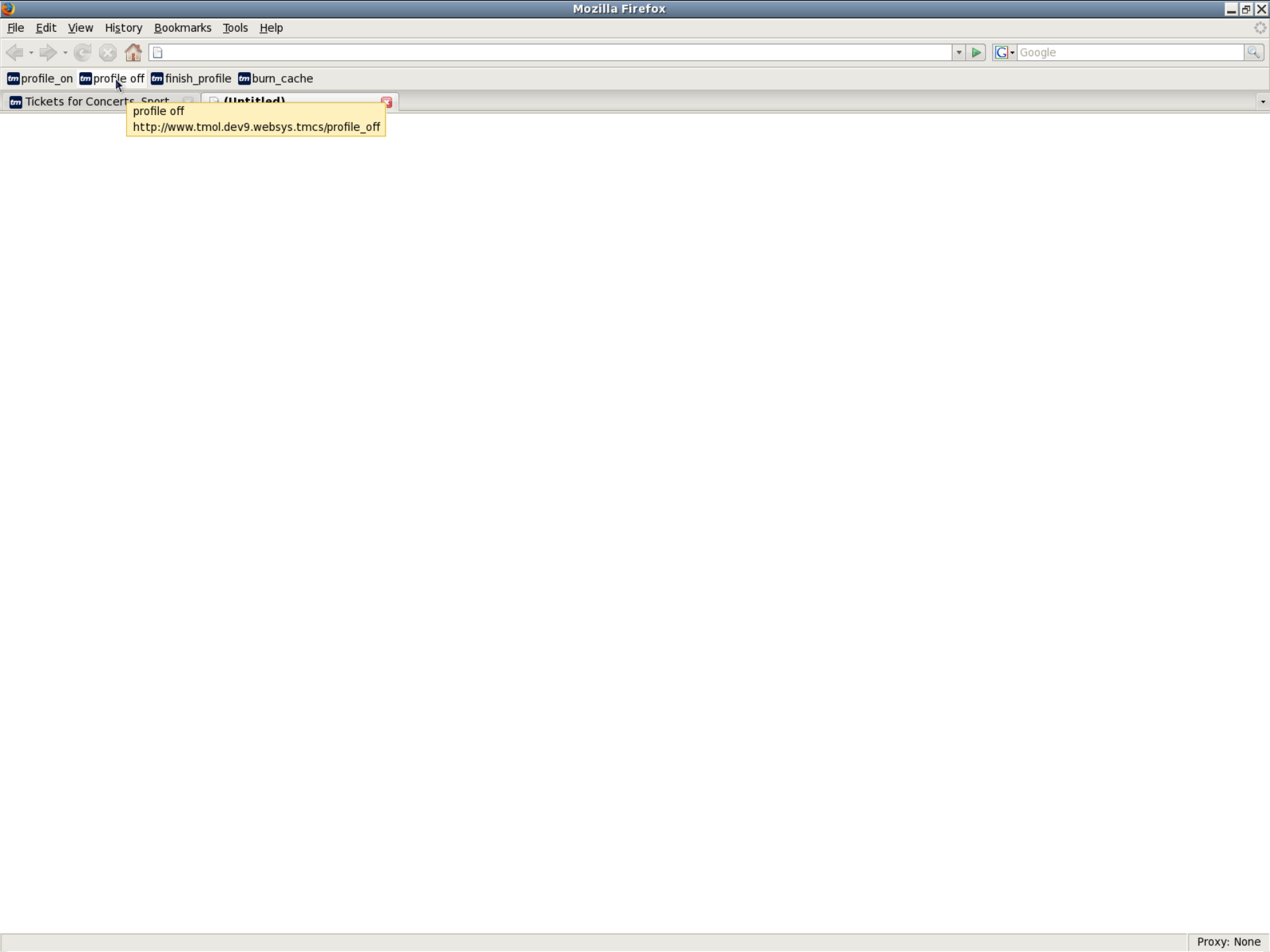
sub Profiling::On::handler {
    $Devel::Profiler::COLLECT = 1;
    print STDERR "profiling ON\n";
    0;
}

sub Profiling::Status::handler {
    my $r = shift;
    return 500 unless $ENV{TM_DO_PROFILE};
    $r->send_http_header('text/plain');
    $r->print($Devel::Profiler::COLLECT);
    0;
}
```


/profile_off

```
# <Location /profile_off>
#   SetHandler perl-script
#   PerlInitHandler Profiling::Off
#   PerlHandler Profiling::Status
# </Location>
```

```
sub Profiling::Off::handler {
    $Devel::Profiler::COLLECT = 0;
    print STDERR "profiling OFF\n";
    0;
}
```

profile off
http://www.tmol.dev9.websys.tmc.com/profile_off

Tickets for Concerts, Sports, Arts, Theater, Family, Events, more. Official Ticketmaster site - Mozilla Firefox


File Edit View History Bookmarks Tools Help

http://www.tmol.dev9.websys.tmcsearch?q=staples

tm profile_on tm profile off tm finish_profile tm burn_cache

Tickets for Concerts, S... http://www.tm...s/profile_off

Check out amazing offers for great events offered exclusively at the American Express Ticket Savings Center.



My Ticketmaster | Gift Cards | Retail Outlets | Help

United States

Change Location

Home Music Sports Arts & Theater Family

Welcome. Sign In

Search Results for "staples" (146)

Set Your Location

City or Zip Code

GO

City

Los Angeles, CA (146)

Category

Sports (132)

Family (10)

Miscellaneous (2)

Music (2)

Event

Los Angeles Kings (52)

Los Angeles Clippers (41)

Los Angeles Lakers (41)

Disney's High School Musical On Ice (9)

Dallas Mavericks (4)

Golden State Warriors (4)

Houston Rockets (4)

Minnesota Timberwolves (4)

See More

Venue

STAPLES Center (144)

Staples Center (2)

Date Range

November 2008

December 2008

January 2009

February 2009

March 2009

United States Of America (1 - 50 of 146)

Event	Location	Date	
Los Angeles Clippers vs. Utah Jazz	STAPLES Center Los Angeles, CA	Mon, 11/03/08 07:30 PM	Find Tickets
Los Angeles Kings vs. Anaheim Ducks	STAPLES Center Los Angeles, CA	Tue, 11/04/08 07:30 PM	Find Tickets
Los Angeles Lakers vs. Los Angeles Clippers	STAPLES Center Los Angeles, CA	Wed, 11/05/08 07:30 PM	Find Tickets
Los Angeles Kings vs. Florida Panthers	STAPLES Center Los Angeles, CA	Thu, 11/06/08 07:30 PM	Find Tickets
Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 11/06/08 - Thu, 11/06/08	Find Tickets
Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 11/06/08 07:30 PM	Find Tickets
Los Angeles Clippers vs. Houston Rockets	STAPLES Center Los Angeles, CA	Fri, 11/07/08 07:30 PM	Find Tickets
Los Angeles Kings vs. St. Louis Blues	STAPLES Center Los Angeles, CA	Sat, 11/08/08 07:30 PM	Find Tickets
Los Angeles Clippers vs. Dallas Mavericks	STAPLES Center Los Angeles, CA	Sun, 11/09/08 12:30 PM	Find Tickets
Los Angeles Lakers vs. Houston Rockets	STAPLES Center	Sun, 11/09/08	Find Tickets

Done

Proxy: None

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http://www.tmol.dev9.websys.tmcsearch?q=staples

tm profile_on tm profile off tm finish_profile tm burn_cache

tm profile_on
http://www.tmol.dev9.websys.tmcprofile_on

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staples

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Search Results for "staples" (146)

Set Your Location

City or Zip Code

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City

Los Angeles, CA (146)

Category

Sports (132)

Family (10)

Miscellaneous (2)

Music (2)

Event

Los Angeles Kings (52)

Los Angeles Clippers (41)

Los Angeles Lakers (41)

Disney's High School Musical On Ice (9)

Dallas Mavericks (4)

Golden State Warriors (4)

Houston Rockets (4)

Minnesota Timberwolves (4)

See More

Venue

STAPLES Center (144)

Staples Center (2)

Date Range

November 2008

December 2008

January 2009

February 2009

March 2009

United States Of America (1 - 50 of 146)

Event	Location	Date	
Los Angeles Clippers vs. Utah Jazz	STAPLES Center Los Angeles, CA	Mon, 11/03/08 07:30 PM	Find Tickets
Los Angeles Kings vs. Anaheim Ducks	STAPLES Center Los Angeles, CA	Tue, 11/04/08 07:30 PM	Find Tickets
Los Angeles Lakers vs. Los Angeles Clippers	STAPLES Center Los Angeles, CA	Wed, 11/05/08 07:30 PM	Find Tickets
Los Angeles Kings vs. Florida Panthers	STAPLES Center Los Angeles, CA	Thu, 11/06/08 07:30 PM	Find Tickets
Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 11/06/08 - Thu, 11/06/08	Find Tickets
Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 11/06/08 07:30 PM	Find Tickets
Los Angeles Clippers vs. Houston Rockets	STAPLES Center Los Angeles, CA	Fri, 11/07/08 07:30 PM	Find Tickets
Los Angeles Kings vs. St. Louis Blues	STAPLES Center Los Angeles, CA	Sat, 11/08/08 07:30 PM	Find Tickets
Los Angeles Clippers vs. Dallas Mavericks	STAPLES Center Los Angeles, CA	Sun, 11/09/08 12:30 PM	Find Tickets
Los Angeles Lakers vs. Houston Rockets	STAPLES Center	Sun, 11/09/08	Find Tickets

Done

Proxy: None

/burn_cache

- Removes backend cache



/burn_cache

```
# <Location /burn_cache>
#   SetHandler perl-script
#   PerlHandler Profiling::BurnCache
# </Location>

sub sub Profiling::BurnCache::handler {
    my $r = shift;

    ... ticketmaster-specific stuff ...

    print STDERR "cache burned\n";
    $r->send_http_header('text/plain');
    $r->print("burned cache in $cluster");
    0;
}
```


Profiling Pattern

- Handy little pattern

```
/burn_cache
```

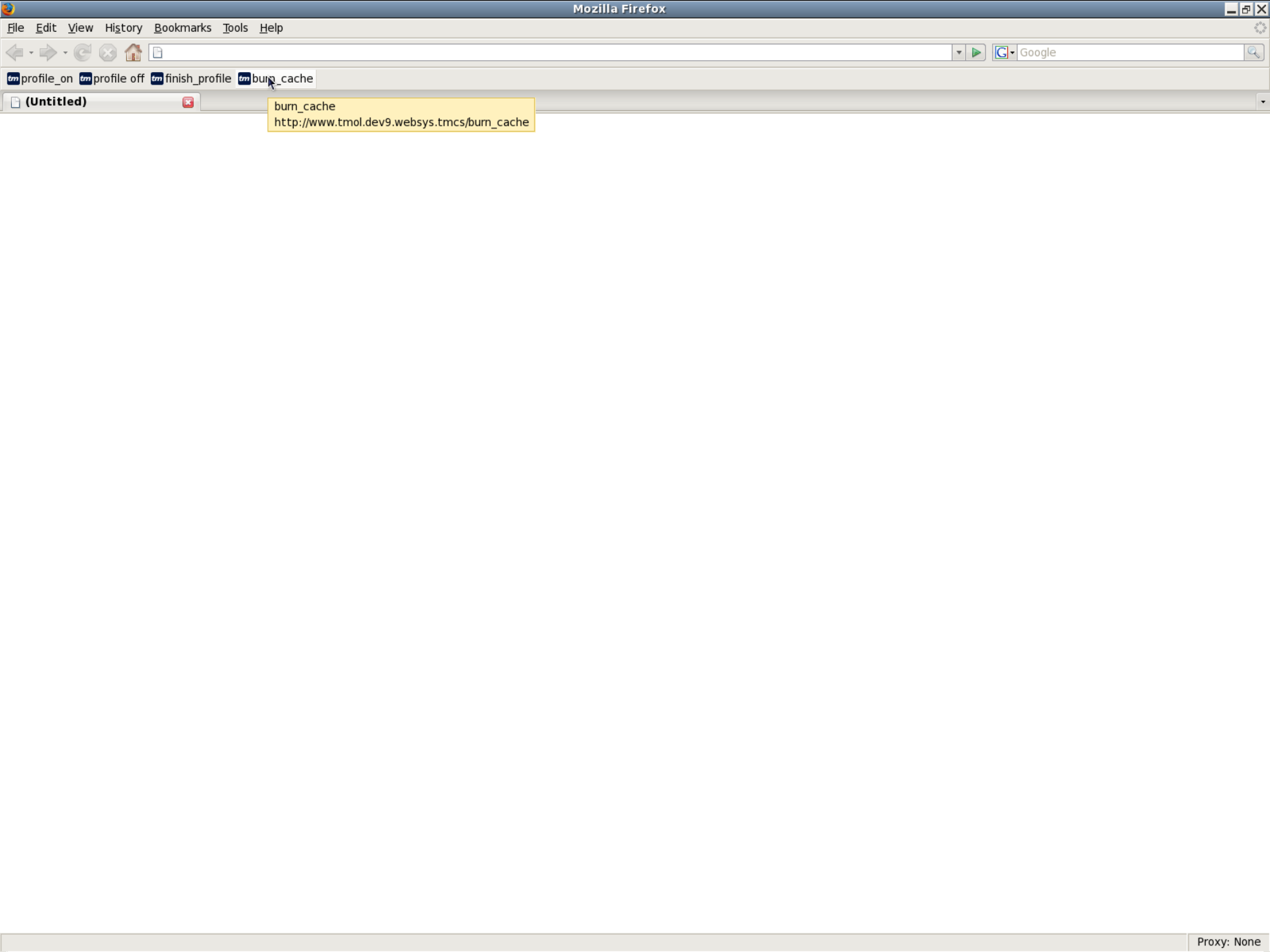
```
/profile_off
```

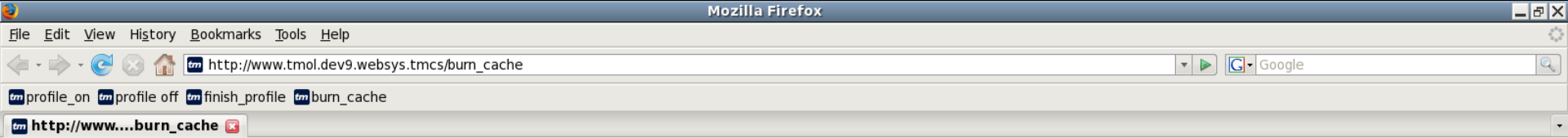
```
[ do stuff you don't care about ]
```

```
/profile_on
```

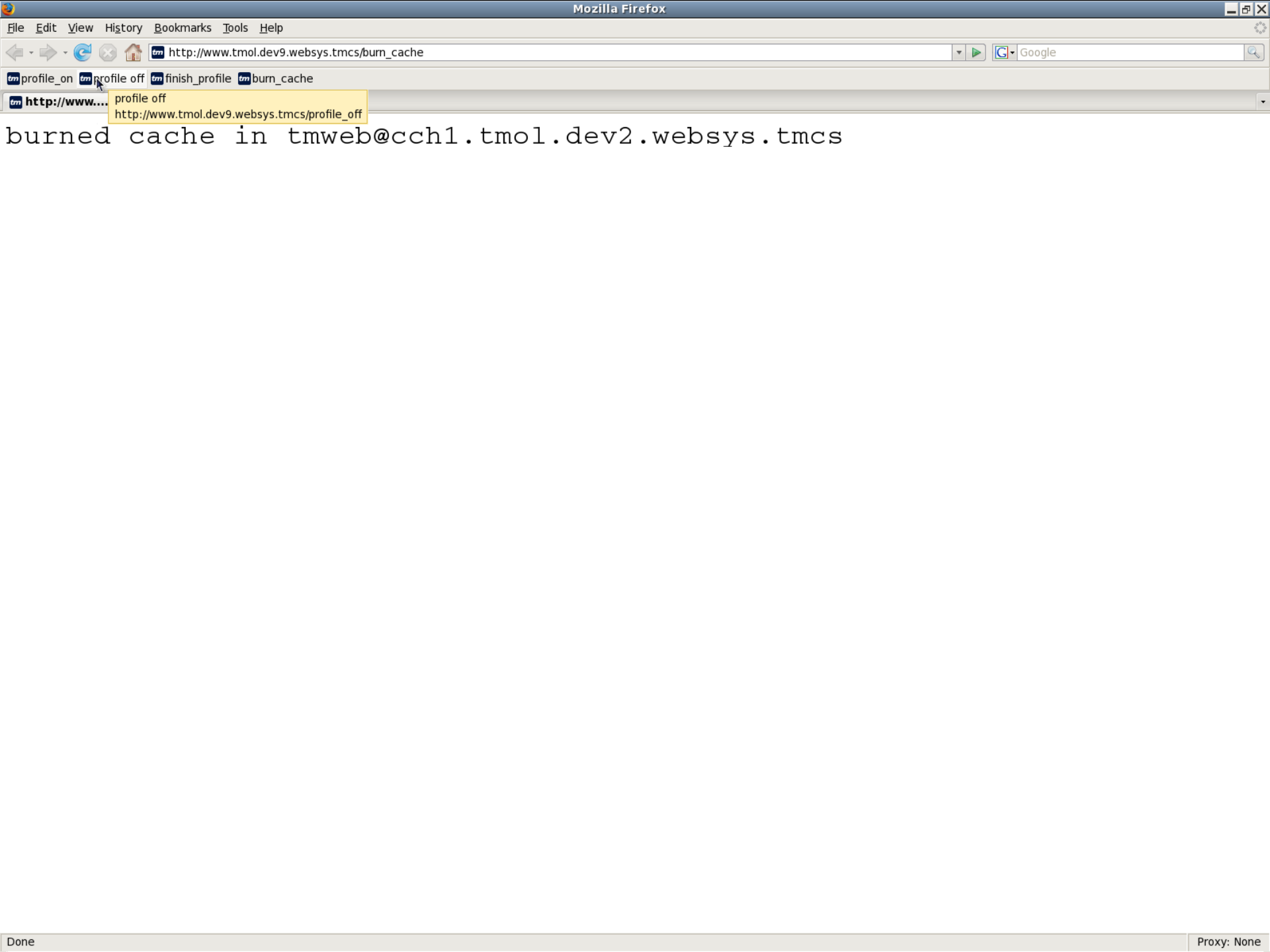
```
[ do stuff you do care about ]
```

```
/finish_profile
```

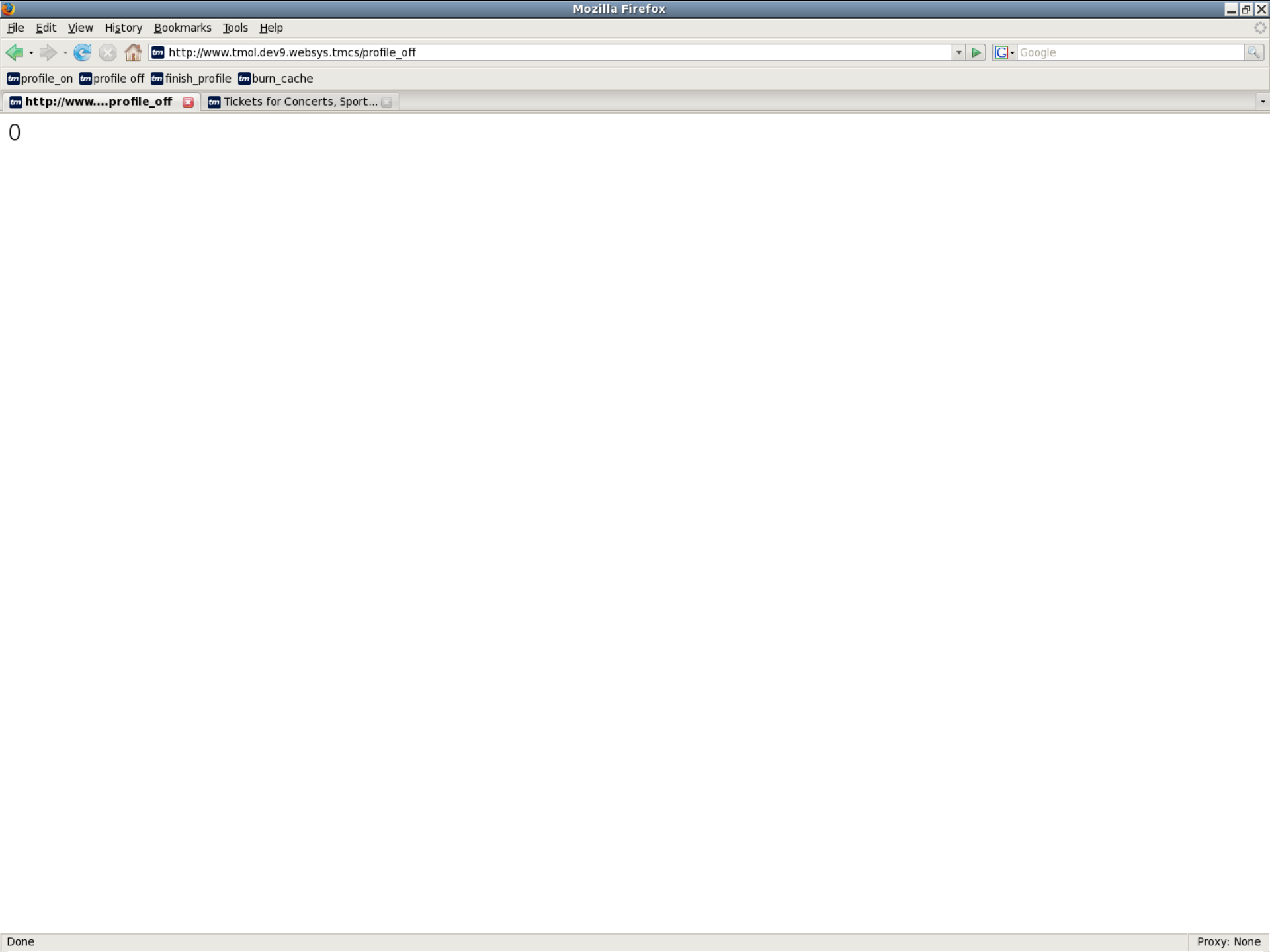





burned cache in tmweb@cch1.tmol.dev2.websys.tmc.com



burned cache in tmweb@cch1.tmol.dev2.websys.tmc



0



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nine inch nails

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Family

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Search Results for "nine inch nails" (18)

Set Your Location

City or Zip Code

GO

City

Atlantic City, NJ (1)
Cedar Rapids, IA (1)
Columbia, MO (1)
Columbus, OH (1)
Council Bluffs, IA (1)
Fort Wayne, IN (1)
Grand Rapids, MI (1)
Greensboro, NC (1)

[See More](#)

Category

Music (18)

Event

Nine Inch Nails (18)

Venue

ARCO Arena (1)
Allen County War Memorial
Coliseum (1)
BI-LO Center (1)
BOK Center (1)
Copp's Coliseum (1)
Credit Union Centre (1)
DCU Center (1)
Greensboro Coliseum
Complex (1)

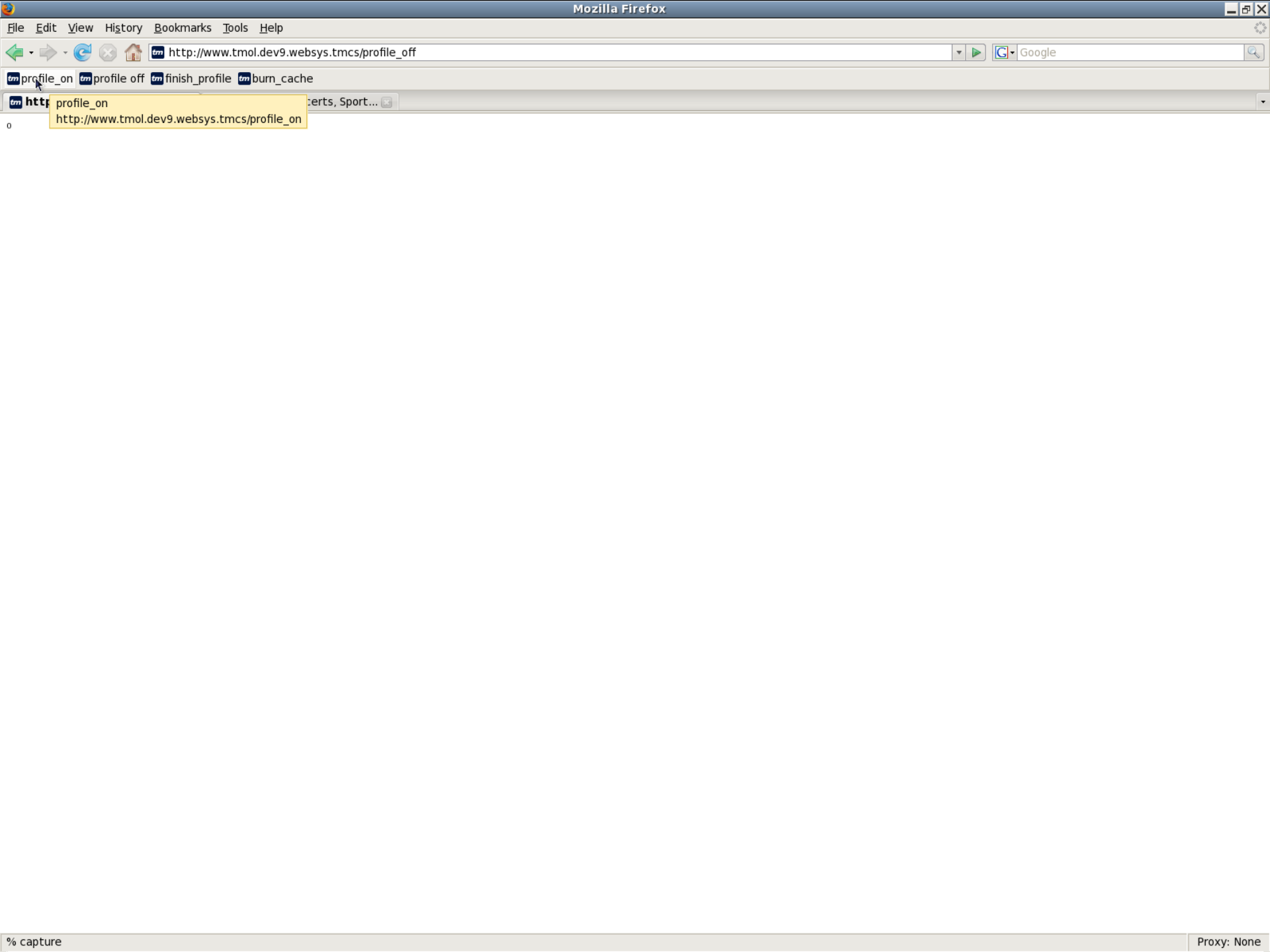
[See More](#)

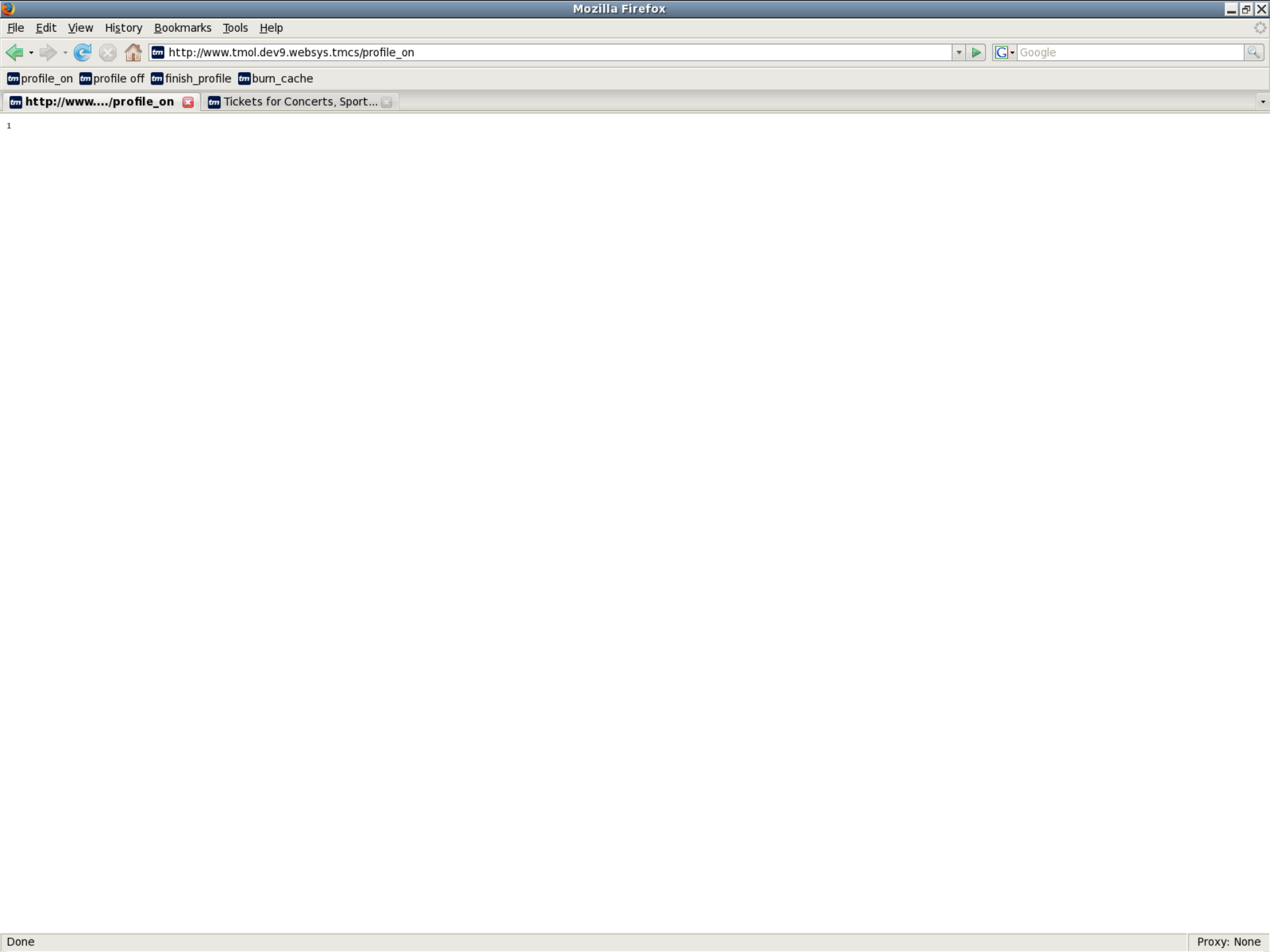
Date Range

October 2008

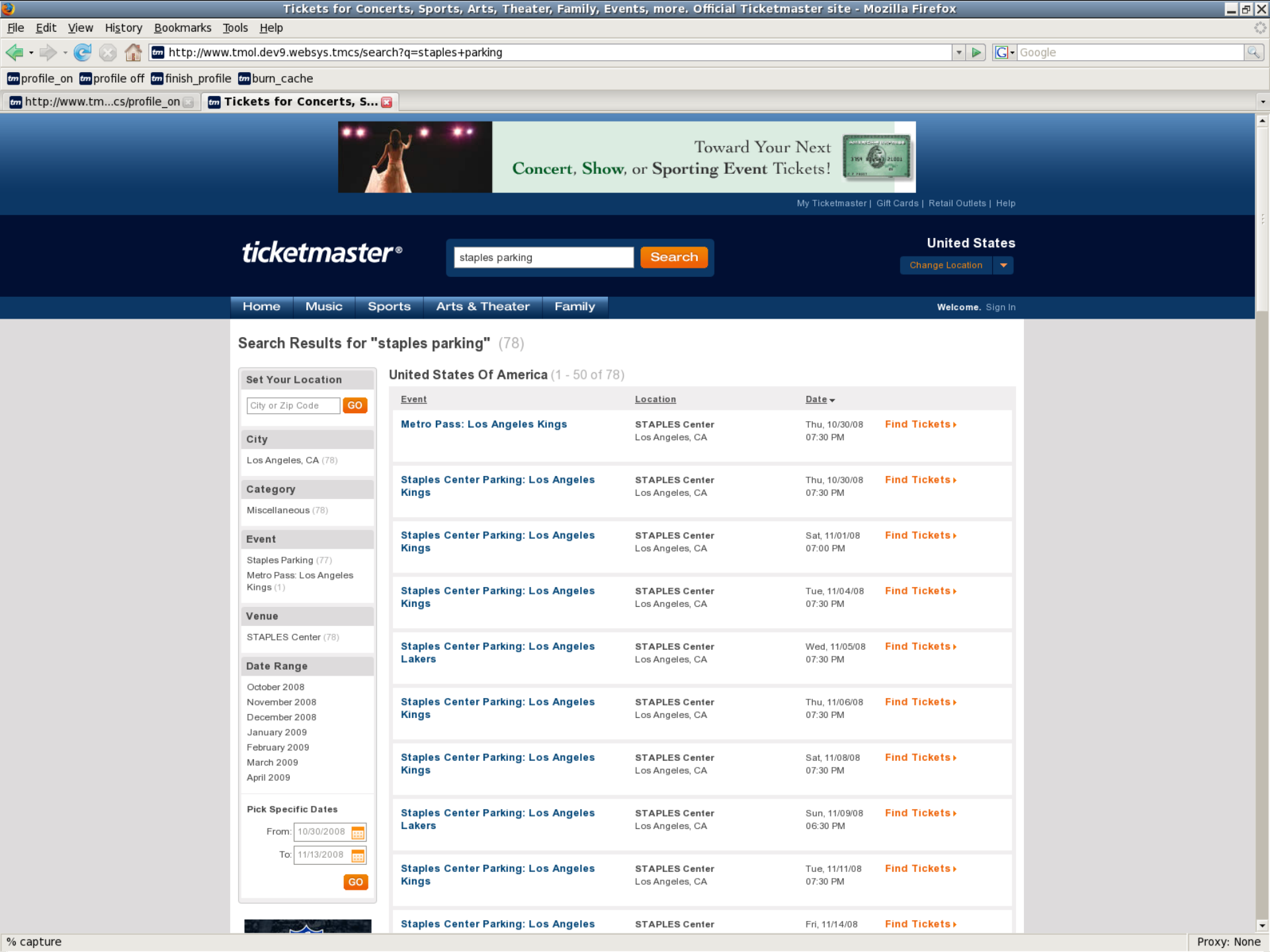
United States Of America (16)

Event	Location	Date	
Nine Inch Nails	Sommet Center Nashville, TN	Fri, 10/31/08 08:00 PM	Find Tickets >
Nine Inch Nails	BI-LO Center Greenville, SC	Sat, 11/01/08 07:30 PM	Find Tickets >
Nine Inch Nails	Greensboro Coliseum Complex Greensboro, NC	Mon, 11/03/08 07:30 PM	Find Tickets >
Nine Inch Nails	House of Blues Atlantic City Atlantic City, NJ	Thu, 11/06/08 08:00 PM	Find Tickets >
Nine Inch Nails	Verizon Wireless Arena - Manchester Manchester, NH	Sat, 11/08/08 07:30 PM	Find Tickets >
Nine Inch Nails	DCU Center Worcester, MA	Sun, 11/09/08 07:45 PM	Find Tickets >
Nine Inch Nails	Van Andel Arena Grand Rapids, MI	Sat, 11/15/08 08:00 PM	Find Tickets >
Nine Inch Nails	Schoffenstein Center Columbus, OH	Mon, 11/17/08 07:00 PM	Find Tickets >
Nine Inch Nails	Allen County War Memorial Coliseum Fort Wayne, IN	Tue, 11/18/08 07:30 PM	Find Tickets >
Nine Inch Nails	US Cellular Center	Thu, 11/20/08	Find Tickets >





1



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staples parking

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Search Results for "staples parking" (78)

Set Your Location

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City

Los Angeles, CA (78)

Category

Miscellaneous (78)

Event

Staples Parking (77)

Metro Pass: Los Angeles

Kings (1)

Venue

STAPLES Center (78)

Date Range

October 2008

November 2008

December 2008

January 2009

February 2009

March 2009

April 2009

Pick Specific Dates

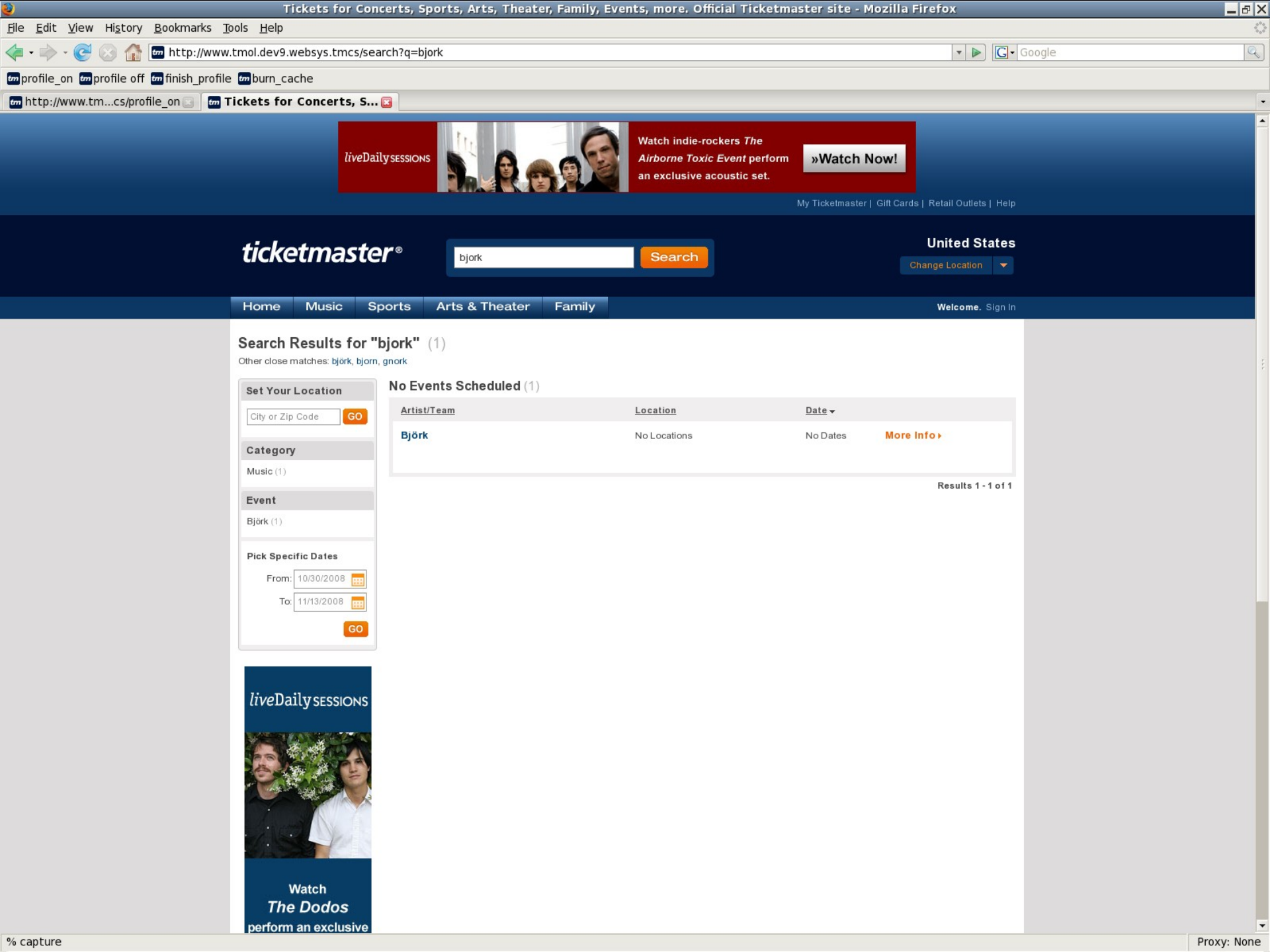
From: 10/30/2008

To: 11/13/2008

GO

United States Of America (1 - 50 of 78)

Event	Location	Date	
Metro Pass: Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 10/30/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 10/30/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Kings	STAPLES Center Los Angeles, CA	Sat, 11/01/08 07:00 PM	Find Tickets >
Staples Center Parking: Los Angeles Kings	STAPLES Center Los Angeles, CA	Tue, 11/04/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Lakers	STAPLES Center Los Angeles, CA	Wed, 11/05/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Kings	STAPLES Center Los Angeles, CA	Thu, 11/06/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Kings	STAPLES Center Los Angeles, CA	Sat, 11/08/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Lakers	STAPLES Center Los Angeles, CA	Sun, 11/09/08 06:30 PM	Find Tickets >
Staples Center Parking: Los Angeles Kings	STAPLES Center Los Angeles, CA	Tue, 11/11/08 07:30 PM	Find Tickets >
Staples Center Parking: Los Angeles	STAPLES Center	Fri, 11/14/08	Find Tickets >



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City

New York, NY (37)

Branson, MO (20)

San Francisco (17)

Seattle, WA (10)

Grand Rapids, MI (8)

Los Angeles, CA (7)

Thousand Oaks, CA (5)

Hamilton, ON (4)

See More

Category

Music (130)

Arts & Theater (60)

Miscellaneous (4)

Event

Red Skelton: a Performance Tribute By Tom Mullica (20)

Badfish - a Tribute To Sublime (18)

Rita Moreno: "Little Tributes" (17)

Rain: a Tribute To the Beatles (12)

Lionel Hampton Tribute Band (8)

Rain: the Beatles Experience (7)

Rick Braun Tribute To Chet Baker (7)

Strawberry Fields: a Tribute To the Beatles (7)

See More

United States Of America (1 - 50 of 182)

Event	Location	Date	
Red Skelton: a Performance Tribute By Tom Mullica	The Mansion Branson, MO	Thu, 10/30/08 10:00 AM	Find Tickets
Lionel Hampton Tribute Band	Iridium Jazz Club New York, NY	Thu, 10/30/08 08:30 PM	Find Tickets
Lionel Hampton Tribute Band	Iridium Jazz Club New York, NY	Thu, 10/30/08 10:30 PM	Find Tickets
Hotter Than Hell - a Tribute To Kiss	Pipeline Cafe Honolulu, HI	Thu, 10/30/08 08:00 PM	Find Tickets
Red Skelton: a Performance Tribute By Tom Mullica	The Mansion Branson, MO	Fri, 10/31/08 10:00 AM	Find Tickets
Lionel Hampton Tribute Band	Iridium Jazz Club New York, NY	Fri, 10/31/08 08:30 PM	Find Tickets
Lionel Hampton Tribute Band	Iridium Jazz Club New York, NY	Fri, 10/31/08 10:30 PM	Find Tickets
Strawberry Fields: a Tribute To the Beatles - All You Can Eat Brunch	B.B. King Blues Club and Grill New York, NY	Sat, 11/01/08 12:00 PM	Find Tickets
The Machine, "The Darker Side of Oz"	Farrell Hall - SUNY Delhi Delhi, NY	Sat, 11/01/08 08:00 PM	Find Tickets
Badfish - a Tribute To Sublime	House of Blues Myrtle Beach	Sat, 11/01/08	Find Tickets

% capture

Proxy: None



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eagles football

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Search Results for "eagles football" (18)

Other close matches: [umass football](#), [nau football](#), [uab blazers football](#)

Set Your Location

City or Zip Code

GO

City

[Philadelphia, PA \(8\)](#)
[Seattle, WA \(2\)](#)
[Baltimore, MD \(1\)](#)
[Cincinnati, OH \(1\)](#)
[Dallas, TX \(1\)](#)
[East Rutherford, NJ \(1\)](#)
[Kalamazoo, MI \(1\)](#)
[Landover, MD \(1\)](#)
[See More](#)

Category

[Sports \(18\)](#)

Event

[Philadelphia Eagles \(14\)](#)
[New York Giants \(3\)](#)
[Arizona Cardinals \(2\)](#)
[Cleveland Browns \(2\)](#)
[Dallas Cowboys \(2\)](#)
[Seattle Seahawks \(2\)](#)
[Southern Miss Golden Eagles \(2\)](#)
[Baltimore Ravens \(1\)](#)
[See More](#)

Venue

[Lincoln Financial Field \(8\)](#)
[Qwest Field \(2\)](#)
[Bright House Networks Stadium \(1\)](#)
[FedExField \(1\)](#)

United States Of America (18)

Event	Location	Date	
Western Michigan University Football vs. Eastern Michigan University Eagles Football	Waldo Stadium Kalamazoo, MI	Sat, 11/01/08 02:00 PM	Find Tickets >
Tennessee State Tigers vs. Tennessee Tech Golden Eagles Football	LP Field Nashville, TN	Sat, 11/01/08 05:00 PM	Find Tickets >
Seattle Seahawks vs. Philadelphia Eagles	Qwest Field Seattle, WA	Sun, 11/02/08 01:00 PM	Find Tickets >
Seattle Seahawks vs. Philadelphia Eagles	Qwest Field Seattle, WA	Sun, 11/02/08 01:00 PM	Find Tickets >
University of Central Florida Football vs. Southern Miss Golden Eagles	Bright House Networks Stadium Orlando, FL	Sat, 11/08/08 03:30 PM	Find Tickets >
Philadelphia Eagles vs. New York Giants	Lincoln Financial Field Philadelphia, PA	Sun, 11/09/08 08:15 PM	Find Tickets >
Philadelphia Eagles vs. New York Giants	Lincoln Financial Field Philadelphia, PA	Sun, 11/09/08 08:15 PM	Find Tickets >
Cincinnati Bengals vs. Philadelphia Eagles	Paul Brown Stadium Cincinnati, OH	Sun, 11/16/08 01:00 PM	Find Tickets >
Baltimore Ravens vs. Philadelphia Eagles	M and T Bank Stadium Baltimore, MD	Sun, 11/23/08 01:00 PM	Find Tickets >



Search

United States

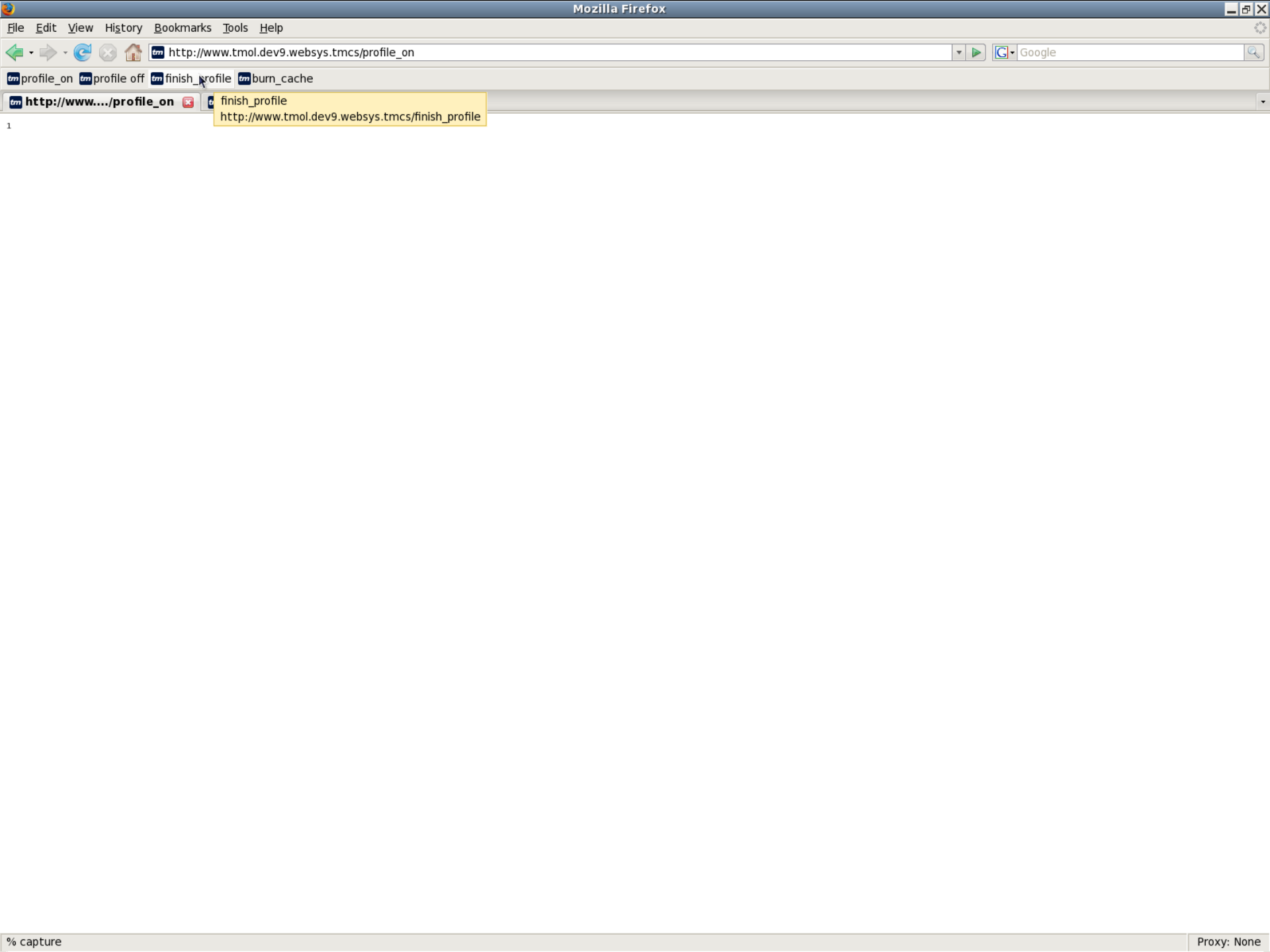
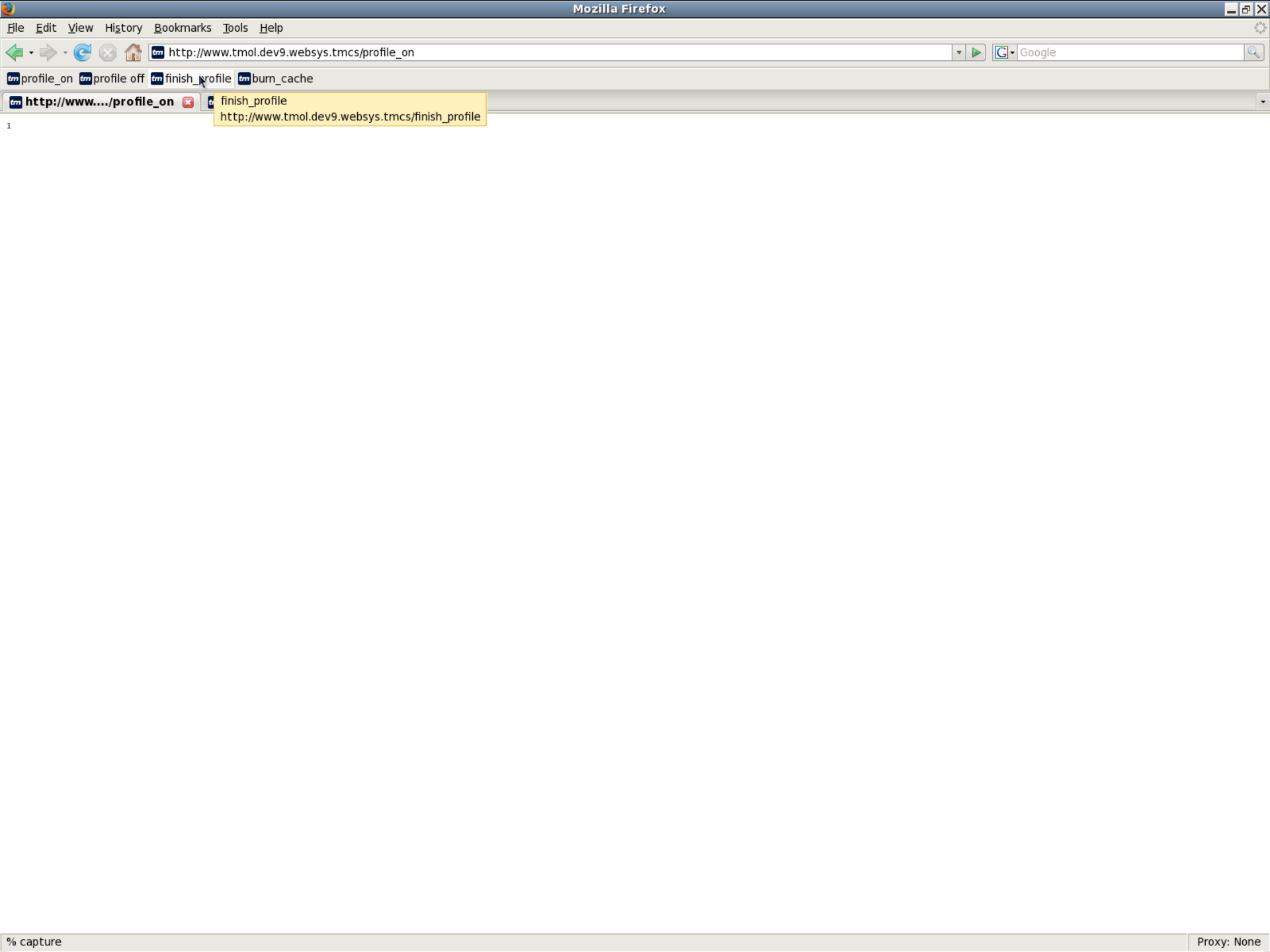
Welcome. Sign In

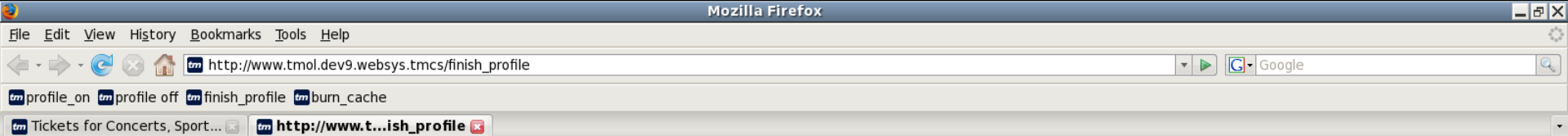
Other close matches: [umass football](#), [nau football](#), [uab blazers football](#)

GO

To: 11/13/2008

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/app/local/logs/dprof/5782/tmon.out


```
[geoff]$ dprofpp -O 21 /app/local/logs/dprof/25248/tmon.out
```



```
[geoff]$ dprofpp -O 21 /app/local/logs/dprof/25248/tmon.out
```

```
Total Elapsed Time = 787.8330 Seconds
```

```
User+System Time = 17.84802 Seconds
```

Exclusive Times

%Time	ExclSec	CumulS	#Calls	sec/call	Csec/c	Name
3.71	0.663	0.663	44	0.0151	0.0151	JSON::XS::encode
3.57	0.637	3.826	15	0.0425	0.2551	Search::Model::JSON::Event::post_process
1.48	0.265	0.447	2659	0.0001	0.0002	TMCS::Cache::get_cache
1.23	0.219	0.273	3576	0.0001	0.0001	Search::Model::JSON::truth
1.10	0.196	0.298	2367	0.0001	0.0001	TMCS::Cache::MemoryReference::get
1.06	0.190	0.678	1194	0.0002	0.0006	BigTime::GregorianCalendar::strftime
1.02	0.182	0.182	2978	0.0001	0.0001	Search::Model::JSON::Event::_uncamel
0.85	0.151	0.512	298	0.0005	0.0017	TM::Model::OnsaleInfo::new
0.84	0.150	0.168	2129	0.0001	0.0001	TMCS::Cache::stringify
0.81	0.144	0.198	1194	0.0001	0.0002	BigTime::GregorianCalendar::_deconstruct_time_to_posix
0.76	0.135	0.877	1190	0.0001	0.0007	Search::Model::JSON::Event::_bigtime_view
0.75	0.133	0.266	870	0.0002	0.0003	BigTime::GregorianCalendar::mktime
0.72	0.128	0.434	76	0.0017	0.0057	TMCS::Cache::HTTP::_do_http_req
0.67	0.120	0.174	52	0.0023	0.0033	Search::Util::Cache::common_search_keywords
0.67	0.119	0.298	2120	0.0001	0.0001	Search::Model::JSON::Event::_bigtime
0.66	0.117	0.117	2068	0.0001	0.0001	BigTime::epoch_seconds
0.66	0.117	0.117	2252	0.0001	0.0001	TMCS::Cache::Singleton::ApacheRequestMemoryReference::new
0.62	0.110	0.328	987	0.0001	0.0003	TMCS::Resource::_get_set_scalar
0.62	0.110	0.110	2454	0.0000	0.0000	POSIX::setlocale
0.57	0.101	0.251	1130	0.0001	0.0002	TMCS::Resource::_get_set_obj
0.55	0.099	0.099	2064	0.0000	0.0000	POSIX::tzset

```
[geoff]$
```


Speaking of Patterns

- Point-and-click testing is so 2001
- Ticketmaster uses `HTTP::WebTest`
- Too bad it's a pile of poo



The TM Way...

Start with open-source

- `HTTP::WebTest`

Fork and make changes

- local `HTTP::WebTest`

Add TM-specific logic

- still local `HTTP::WebTest`

Decide local changes suck, create wrapper

- `DPS::WebTest`

Decide old wrapper sucks, create new wrapper

- `DPS::WebTest::Simple`



profile for:

18 unique searches

(/app/local/logs/dprof/17244/tmon.out)

Total Elapsed Time = 24.183 Seconds

User+System Time = 6.97 Seconds

Exclusive Times

%Time	ExclSec	Cumuls	#Calls	sec/call	Csec/c	Name
8.92	0.622	0.622	16146	0.0000	0.0000	Encode::_utf8_on
8.32	0.580	1.272	18	0.0322	0.0707	TMCS::Control::process_template
5.71	0.398	1.075	72	0.0055	0.0149	TM::Model::Lookup::Markets::new
2.81	0.196	0.629	180	0.0011	0.0035	TMCS::Cache::HTTP::_http_req
2.80	0.195	0.195	1728	0.0001	0.0001	TMCS::Cache::stringify
2.67	0.186	0.280	2047	0.0001	0.0001	TMCS::Cache::get_cache
1.98	0.138	0.275	1741	0.0001	0.0002	TMCS::Cache::MemoryReference::get
1.58	0.110	1.449	162	0.0007	0.0089	TMCS::Service::Search::search
1.35	0.094	0.250	973	0.0001	0.0003	Encode::decode
1.33	0.093	0.111	1135	0.0001	0.0001	Encode::find_encoding
1.32	0.092	0.164	908	0.0001	0.0002	TMCS::Model::_recurse_attribs
1.31	0.091	0.308	684	0.0001	0.0005	TMCS::Control::get_request_data
1.21	0.084	0.084	2129	0.0000	0.0000	TMCS::Language::Hash::FETCH
1.19	0.083	0.173	643	0.0001	0.0003	TMCS::Resource::_get_set_scalar
1.06	0.074	0.074	1548	0.0000	0.0000	TMCS::Service::Search::fallback
1.06	0.074	0.296	162	0.0005	0.0018	TMCS::Service::Search::QueryGen::query_core
1.06	0.074	0.185	162	0.0005	0.0011	TMCS::Service::Search::QueryGen::lookup_search_table
0.92	0.064	0.064	1350	0.0000	0.0000	Encode::is_utf8

More...

- `Devel::Profiler`

<http://sourceforge.net/projects/devel-profiler/>

- `Devel::Profiler::Plugins::Template`

<http://search.cpan.org/dist/Devel-Profiler-Plugins-Template/>

- **These Slides**

<http://www.modperlcookbook.org/~geoff/>