Web Presence Monitoring using Perl

SANS MSISE Community Project
First Oral Presentation
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Web Service provider Management

- Due Diligence
- Periodic Vendor Review
- Business Continuity
  - Their plan and your plan
- Testing
- *Monitoring*

Monitoring your Service Provider

- Web server and Internet connection uptime
- Application and database uptime
- Response time and load testing
- DNS reliability

Security and Brand Monitoring

- Defacement
- DNS Spoof/Hijack
- Denial of Service
- Referrals and associations
- SPAM sites/corporate identity theft
- Brand/Graphic use

Web service monitoring options

1. Commercial Service Provider
2. Commercial Software
3. Code it yourself
   - Consider cost, skills, flexibility, Internet connectivity, and maintenance effort

Why PERL

- Free and open source
- Cross platform
- Many useful add-on modules are available
- Flexibility
- Powerful pattern matching/text manipulation abilities
- Easy to schedule with Windows Scheduler or cron

Perl Set Up

- Download and install Activestate ActivePerl distribution
- Install any needed additional packages using Perl Package Manager

C:\>ppm install Net-DNS

C:\>ppm install http://theoryx5.uwinnipeg.ca/ppms/Crypt-SSLeay.ppd

DNS Lookup

```
# set a High Resolution timer
$starttime = [gettimeofday];
# Lookup DNS
my $resolver = Net::DNS::Resolver->new;
my $query = $resolver->search('demo.sample.com', "A");
if ($query)
{
   foreach $responserecord ($query->answer)
   {
      $returnedIPAddress = $responserecord->address;
      if ($returnedIPAddress ne '192.168.6.101')
      {
         send_mail($mailfrom, $mailto, $mailsubj, "Error: DNS Addr
         SaveToFile($logfile, "Error: DNS Address $returnedIPAdd
      }
      else
      {
         $responseTime = tv_interval ($starttime, [gettimeofday]);
         SaveToFile($logfile, "DNS Response Correct: $returnedAdd
      }
```

Secure Web Page
Test for Availability, Defacement

```
my $req = new HTTP::Request('GET', "https://demo.sample.com/login.html");
my $response = $ua->request($req);
if ($response->is_success)
{
   SaveToFile( "content_Current.html", $res->content);
   if (compare("content_Current.html","content_Original.html") == 0)
   {
      SaveToFile($logfile, "Web page login.html has not changed\n");
   }
   else
   {
      SaveToFile($logfile, "Error: web page login.html has changed");
      send_mail($mailfrom, $mailto, $mailsubj, "Error: login.html changed"
   }
}
else # web page unavailable, send an alert
```

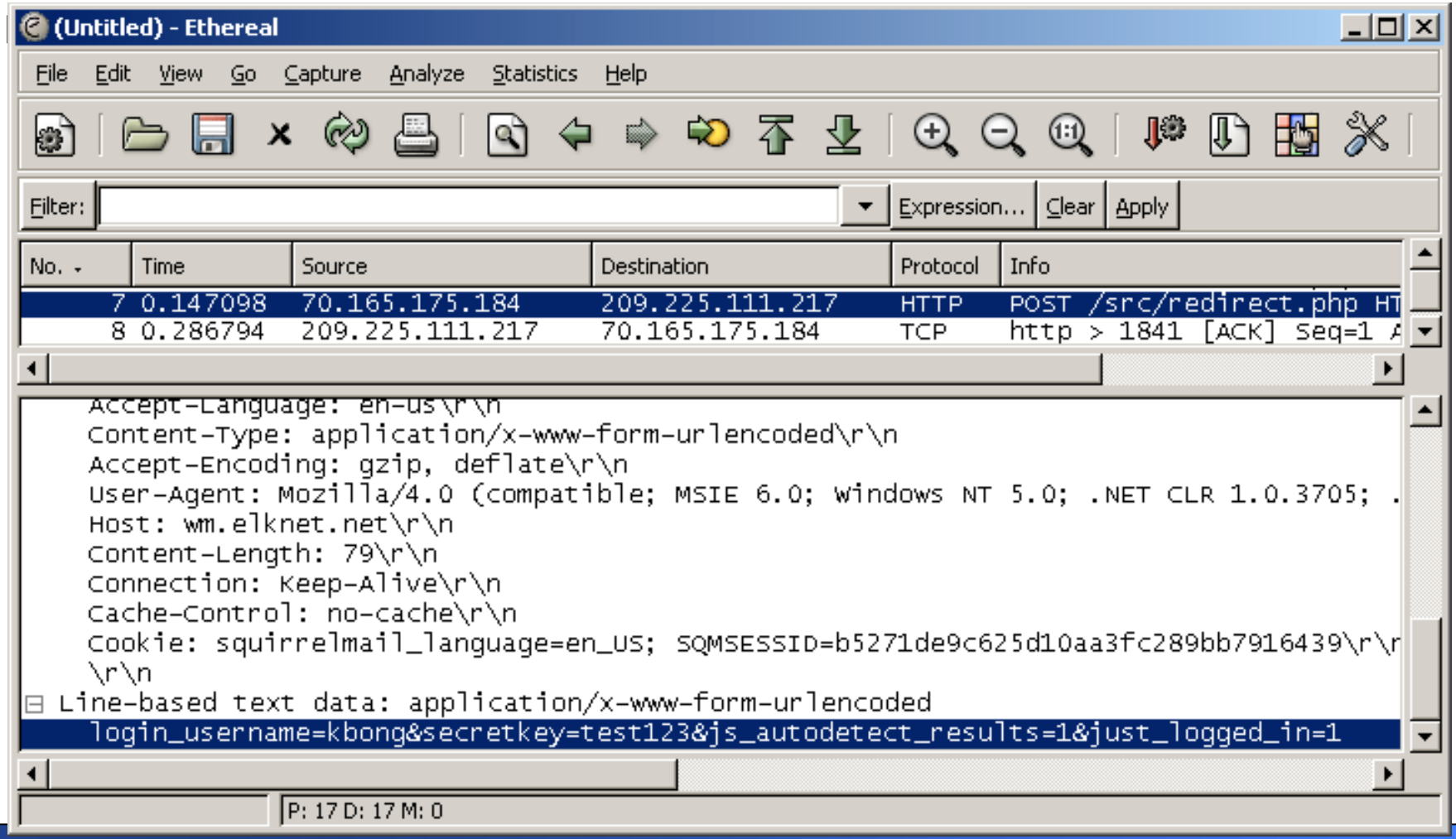
Sample logfile output

```
9/26/06 19:11:25 DNS Response Correct: 192.168.6.101 in 5.056 seconds
9/26/06 19:11:30 Web page login.html has not changed
9/26/06 19:16:24 DNS Response Correct: 192.168.6.101 in 4.542 seconds
9/26/06 19:16:29 Web page login.html has not changed
9/26/06 19:21:20 DNS Response Correct: 192.168.6.101 in 4.101 seconds
9/26/06 19:21:24 Error: Page login.html has changed
9/26/06 19:26:15 Error: Bad DNS Response: 172.16.1.9 in 1.028 seconds
9/26/06 19:27:17 Error: Page login.html is unavailable
9/26/06 19:32:21 Error: DNS service for demo.sample.com is unavailable
```

Web Application Availability

- Script a Multi-step form submission
  1. Start a timer
  2. Load the login page
  3. Submit the login page using a test account
  4. Check the response page for expected content (i.e. “Account Balance:”)
  5. Submit the logout page
  6. Record the time elapsed

Use Ethereal (or other sniffer) to determine form fields



Web Site Performance Management

- Response time thresholds
  - Alert if the response time for the "Web Application Availability" script exceeds a preset threshold
- Web site load testing
  - Run multiple instances of the "Web Application Availability" script in a loop.

Referrals and Associations

- Who is talking about you, copying content from your site, or linking to your site?
- Automate monitoring of search engine results
- Track changes month to month/monthly email of new search engine hits

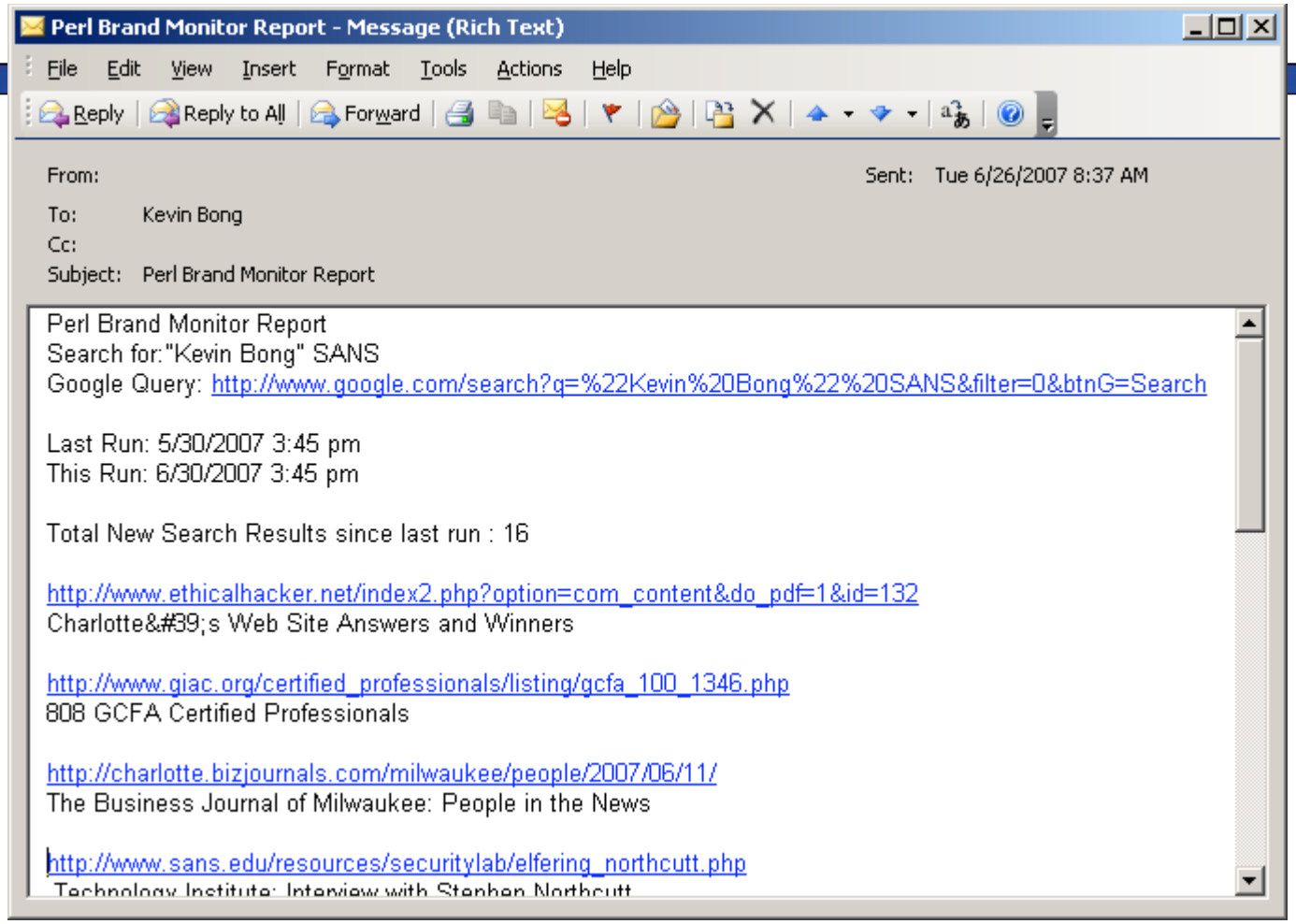
What to search for?

- Your URL
- Your organization name
- A block of text off your home page
- Filenames of key images/logos on your site (provided they are unique)

Brand Monitoring Code Sample

```
$searchurl = "http://www.google.com/search?q=" . uri_escape($searchstring)
$allcontents = &geturlcontents($searchurl);
while ($allcontents)
{
  # RegExp to cut each of the search results out
  @searchresults = ($allcontents =~ m/\<h2\sclass\=r\>(.*?)\<\/h2\>/igs);
  foreach $resultmatch (@searchresults)
  {
    if ($resultmatch =~ m/\<a\shref\=\"(.*)\".*\>(.*)\<\/a\>/)
    {
      # searchresulthash contains the URL and the link text
      $searchresultshash{$1} = $2;
    }
  }
  # Look for the "Next" link...meaning there are more results available
  if ($allcontents =~ m/\<div\sid\=nn\>\<\/div\>Next\<\/a\>/)
  {
    $onmoreresultsstart += 10;
    $allcontents = &geturlcontents($searchurl . "&start=" . $onmoreresult…
```

Brand Monitoring Output Sample



Web Presence Monitoring Wrap-up

- Critical component of vendor and service management
- Commercial or home-grown options
- Monitor for availability and performance
- Monitor security and brand protection
- Historical records and trending

Web Presence Monitoring sample scripts

- Perl scripts demonstrating these concepts are available at:

http://www.lapooh.com/presence/