

About Me

- Robert Hansen CEO
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 - Bespoke Boutique Internet Security
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- Advisory capacity to VCs/start-ups
- Founded the web application security lab
 - http://ha.ckers.org/ the lab
 - http://sla.ckers.org/ the forum

Xploiting Google Gagets, and Clickjacking

- iHumble
- I want to explain the history...
- Only a few know the whole story.
- Sit back and relax, it's story time.



Before We Start...

- We've all heard these sentiments: "If you find a vulnerability, we ask that you share it with us. If you share it with us, we will respond to you with a time we will fix that hole." Scott Petry Director @ Google
 - (We'll be coming back to this!)

Ah, Memories...

- It all started four years ago...
- We found that redirection vulnerabilities were being used by phishers in a number of sites, Visa, Doubleclick, eBay and of course, Google to confuse consumers.
- Timeframes for fixes:
 - Visa closed their hole down within hours
 - Double Click within days (partially)
 - eBay within weeks
 - Google still hasn't closed them (~4 years later)
- Every company agrees it's a hole. Everyone

It's out there!

Word gets out – fast!

- http://blogs.geekdojo.net/brian/archive/2004/10/14/googlephishing.aspx
- http://lists.virus.org/dshield-0602/msg00156.html
- http://blog.eweek.com/blogs/larry_seltzer/archive/2006/03/05/8240.aspx
- http://thespamoiaries.blogspot.com/2006/03/google-used-as-url-cloaking-device-in.html
- http://www.docuverse.com/blog/donpark/EntryViewPage.aspx?guid=e08af74b-8b86-418c-94e0-7d29a7cb91e2
- http://email.about.com/od/outlooktips/qt/et043005.htm
- http://listserv.educause.edu/cgibin/wa.exe?A2=ind0511&L=security&T=0&F=&S=&P=15599
- http://www.zataz.com/news/13296/google-corrige-une-faille.html
- http://google.blognewschannel.com/archives/2007/02/22/google-changes-redirectsadds-nofollow-to-blogger/
- http://googlesystem.blogspot.com/2007/02/google-redirect-notice.html

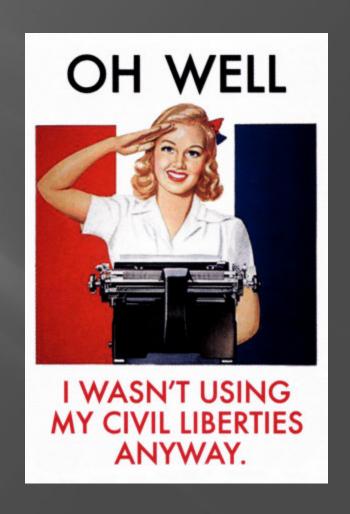
And others...

Google, Failure #1

- Everyone has vulns. But in this case...
- We informed Google that their own users were being exploited, to which we were told that they were putting a blacklist in place.
- Yes, you heard me, a blacklist...
- Blacklists only block what you know, not what you don't know they refused to fix the problem properly. Add one character, you evade their blacklist. Best engineers in the world, eh?

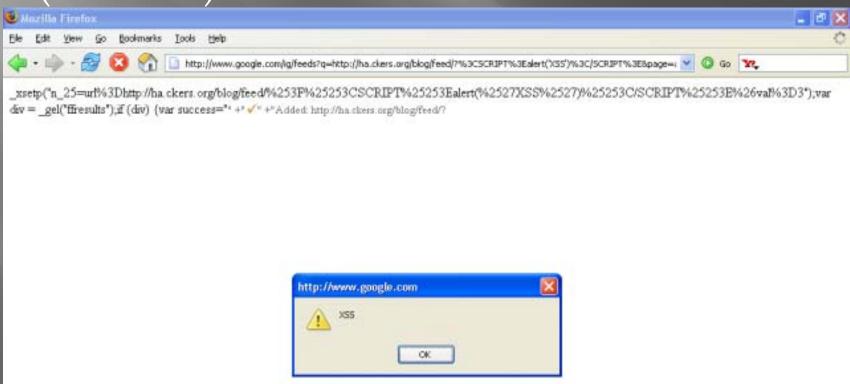
Google, Failure #2

- Why not fix it?
 - Money: Expensive to fix
 - Money: Useful for tracking users
 - Money: Would break "feeling lucky" and other tools that drive 'stickiness'
- Why fix it?
 - Altruism: It's the right thing to do (Google != Evil)
 - Altruism: It's hole being actively used (not theory)
 - Altruism: Stop contributing to the problem
- So what did I do? I waited two years...



...and then I Went FD

- I like consumers more than Google.
- I disclosed 4 redirects 11th, Jan 2006 (with no reaction)
- I then disclosed 1 XSS hole on 4th, Jul 2006 (reaction!)



Wait, You Agree?!

- "Just to close this subject out, I think the open url redirection ... has been closed.... To the extent that open url redirection was being used by phishers, closing the most-used url should make a difference." - Matt Cutts
- "Given that tons of different internal groups at Google used this redirector for quite a while, it's understandable that it took a little while to close this." - Matt Cutts



Matt Cutts said on February 23, 2007 2:00 PM PDT:

Yup, it's good that Google made this change, because some bad guys were using this url redirector for thing like phishing



Why Do I Care About Redirects?

- Anti-Phishing Primer:
 - Whitelist first
 - Known good sites
 - False positives
 - Webmail
 - Blacklist second
 - Known bad URLs (not domains)
 - Heuristics last
 - DNS sometimes
- Google is litigious.
 - We marked Google as a phishing site, but guess why?
 - It WAS a phishing site! Duh!
- 🗉 Consumers put misguided trust in Google. 🖭



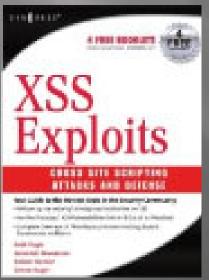
Google Gagdets

- Well, it just so happens that JavaScript can redirect too.
- But this time, I'm nice! Remember Mr. Petry, if you disclose it to us responsibly, "we will fix that hole".



Their Response





- "On further review, it turns out that this is not a bug, but instead the expected behavior of this domain."
- "Since these modules reside on the gmodules.com domain instead of the Google domain, cross-domain protection stops them from being used to steal Google-specific cookies, etc."
- Uh... Bueller?

My Response:

Subject: Re: [#188242313] Another XSS hole

From: RSnake

Date: 8/17/2007 1:17 PM

To: Google Security

content-transfer-encoding: 7bit

Wow.

Google Security wrote:

Hi RSnake,

On further review, it turns out that this is not a bug, but instead the expected behavior of this domain. Javascript is a supported part of

Wow.

Shame On You Google

- Google already agreed redirection was bad.
- Google is still an evil litigious company (maybe more so now than ever).
- Google doesn't have the first clue what JavaScript can be used for, apparently (redirection).
- Google lied about the danger of a vulnerability that they already agreed to fix.
- Bad guys are STILL using it!



Google Ads Abused to Serve Spam and Malware

Monday March 17, 2008 at 9:05 am CST

Posted by Vinoo Thomas

Trackback

Early this year we observed spammers using Google page ads in <u>HTML-formatted emails</u> to redirect users who click the spammed URL to the spammers' sites.

http://www.google.com/pagead/iclk?sa=l&ai=MfeNYS &num=123456&adurl=http://www.spammersite.com

At first we thought Google page ads were being used to conceal the actual URL and subvert traditional anti-spam detection techniques. However, it seems one can change the linked URL to point to any site of your choice—as no validation appears to be done on Google's end.

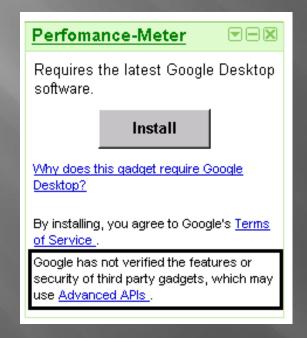
Press Worthy Mentions

- The Google Desktop Vuln (May 31st, 2007) 'Regarding security-flaw disclosure, Mr. Merrill says Google hasn't provided much because consumers, its primary users to date, often aren't tech-savvy enough to understand security bulletins and find them "distracting and confusing." Also, because fixes Google makes on its servers are invisible to the user, notification hasn't seemed necessary, he says.' - Wall Street Journal
- □ Phishing problem (Nov 1st 2007) "in the two months since RSnake first made his concerns public, no one from Google has publicly disputed anything he has said" News.com

DISTURBING DISCLAIMERS: GADGET FAQ

What if my Gadget is broken or displays offensive or inappropriate content?

Most of our gadgets are created and maintained by third parties. If you have questions or concerns about the functionality or content of a particular gadget, we suggest you contact the gadget's author directly. You may be able to locate contact information for the gadget's creator





ADVANCED API

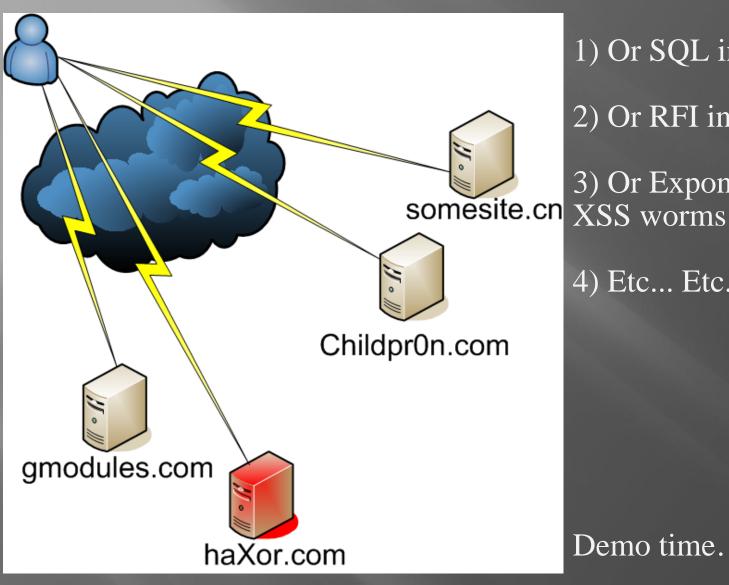
Google Desktop Gadget API

http://code.google.com/apis/desktop/

Desktop gadgets are powerful mini-applications that can live within the Google Desktop sidebar, or right on the user's desktop, or even inside iGoogle home pages. You create Desktop gadgets using XML and JavaScript, optionally adding native code for access to Windows APIs. The Desktop Gadget API enables advanced functionality such as transparency, animation, custom fonts, and personalization.

http://desktop.google.com/en/dev/advancedapi.html http://code.google.com/more/#products-gadgets-gdgadgets

CSRF GADGET



- 1) Or SQL injection CSRF
- 2) Or RFI injection CSRF
- 3) Or Exponential (Xdomain)
- 4) Etc... Etc...

Demo time...

SIMPLE PHP SPIDER

We fetch a PHP script within the Gadget

Configuration

Results



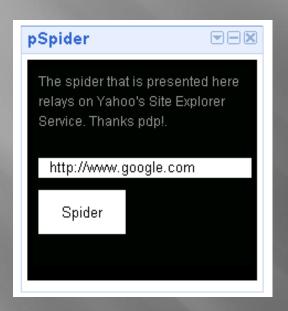




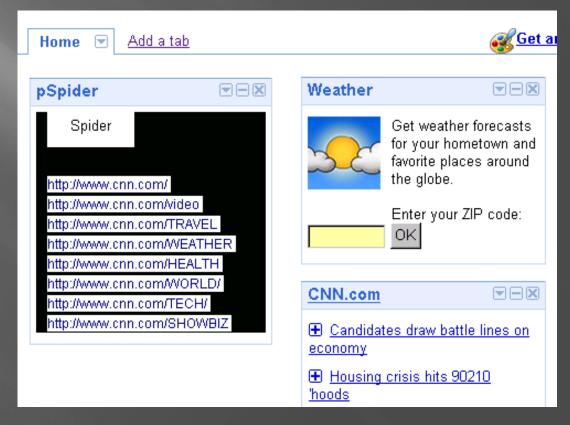


YAHOO SITE EXPLORER SPIDER GADGET (PSPIDER)

Configuration



Results



http://exgenesis.com/wonderbread/pspider.xml

JS PORT SCANNER GADGET

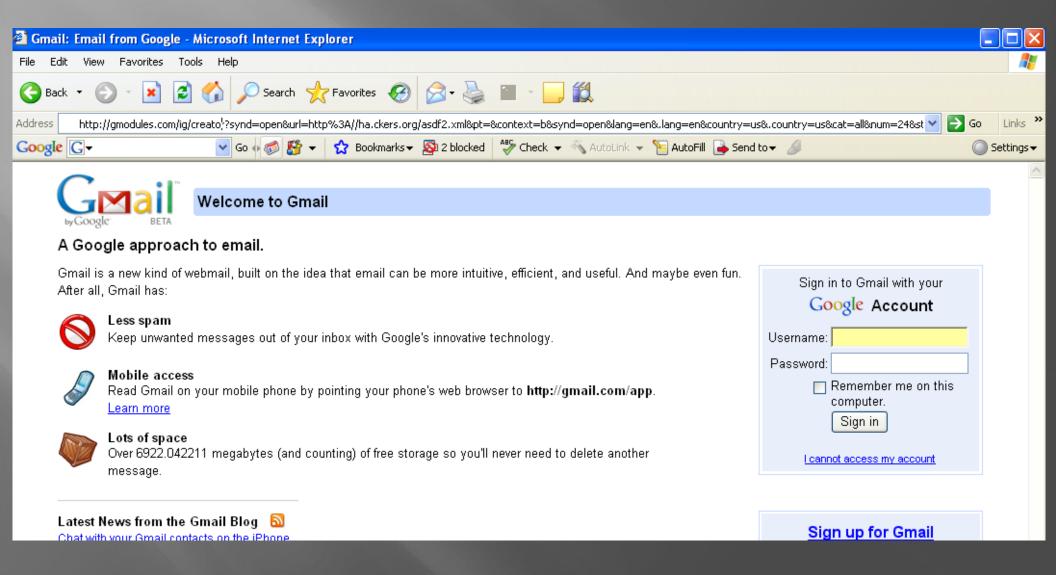
pScan Configuration



Results

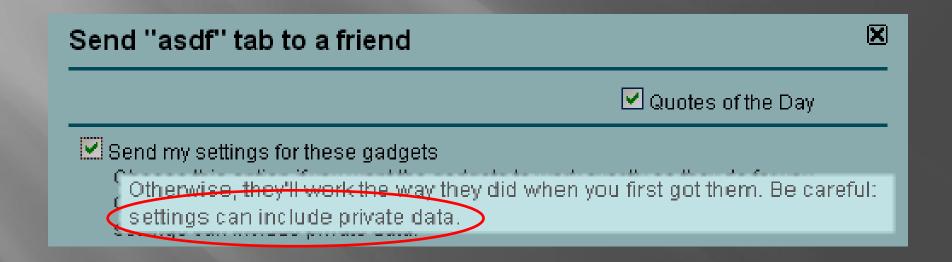


PHISHING GADGET



CROSS-GADGET ATTACKS

1. Gadgets can attack one another, steal cookies and/or data, manipulate the content of other gadgets.



Demo time...

Referrers

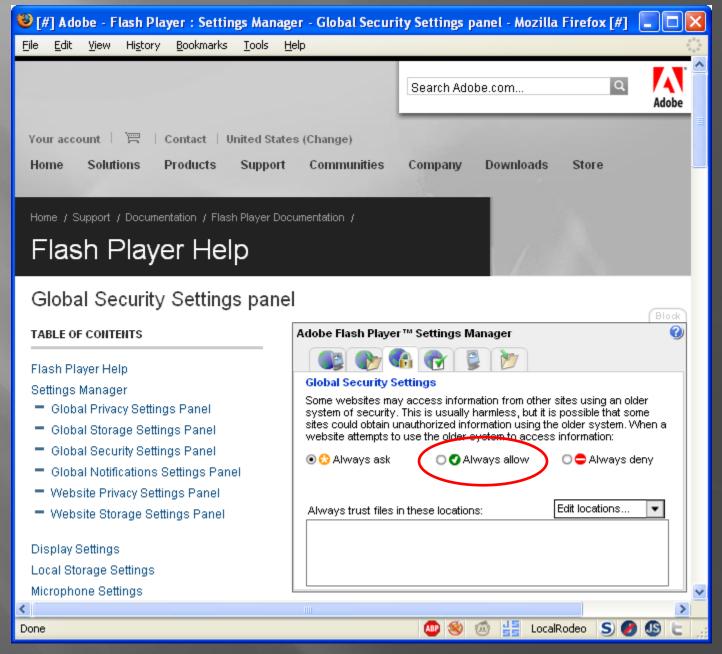
http://89.gmodules.com/ig/ifr?url=http://www3.sympatico.ca/mjdresser/Delicious.xml &nocache=0&up_username=wipeouter&up_tag=&up_count=15&upt_count=enum&up_images=0&upt_images=bool&lang=de&country=de&.lang=de&.country=de&synd=ig&mid=89&ifpctok=6968901372936289341&parent=http://www.google.de&extern_j s=/extern_js/f/CgJlbhICdXMrMAo4ACw/8IKVf7DB5CY.js

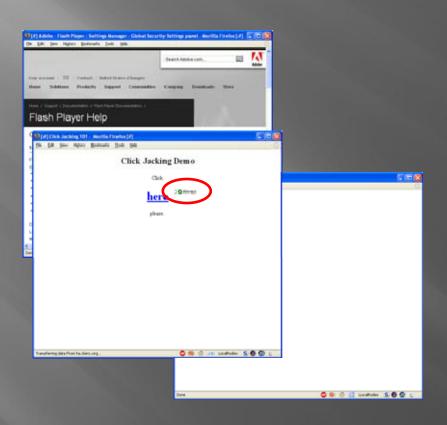
http://98.gmodules.com/ig/ifr?url=http://customrss.googlepages.com/customrss.xml&n ocache=0&up_rssurl=http://ha.ckers.org/blog/feed/&up_title=ha.ckers.org&up_titleurl=http://ha.ckers.org&up_num_entries=10&up_linkaction=openlink&upt_linkaction=enum&up_background=E1E9C3&up_border=CFC58E&up_round=1&upt_round=bool&up_fontfamily=Arial&up_fontsize=8pt&up_openfontsize=9pt&up_itempadding=3px&up_bullet=icon&upt_bullet=enum&up_custicon=Overrides+favicon.ico&up_boxicon=1&upt_boxicon=bool&up_opacity=20&upt_opacity=enum&up_itemlinkcolor=596F3E&up_itemlinkweight=Normal&upt_itemlinkweight=enum&up_itemlinkdecoration=None&upt_itemlinkdecoration=None&upt_vlinkweight=Normal&upt_vlinkweight=enum&up_vlinkcolor=C7CFA8&up_vlinkweight=Normal&upt_vlinkweight=enum&up_datecolor=9F9F9F&up_tcolor=1C57A9&up_thighlight=FFF19D&up_desclinkcolor=1B5790&up_color=000000&up_dback=FFFFFFF&up_dborder=DFCE6F&up_desclinkweight=Bold&upt_desclinkweight=enum&up_desclinkdecoration=enum&lang=nl&country=us&.lang=nl&country=us&synd=ig&mid=98&ifpctok=-

5944482123251000084&parent=http://www.google.com&extern_js=/extern_js/f/CgJlb hICdXMrMBI4ACwrMBM4ACw/v3vgcgA0x8g.js

Seriously, is this a problem?

- How can you get a malicious Google Gadget on someone's iGoogle?
 - They can add something that they think is good but turns into something bad.
 - We can hack any one of the hundreds of domains that already host Google gadgets (remember how easy it is to hack into websites)?
 - Since Google's base domain is vulnerable to XSS fairly frequently, we could use XMLHTTPRequest if we know of one. But if we have that, we don't need any of this other stuff, so that's not a practical argument although it would add persistence to your attack if necessary (turning reflected XSS into persistent).
 - Annund, we can force people to add it subversively...
 - Demo time.





Clickjacking Issues

- JavaScript is not required
- Flash vulnerable
- Flash security settings manager is also vulnerable
- IE7.0 and IE8.0 could be overlayed, plus IE8.0 persistence (demo x2...)
- Framebusting code does not work well in IE8.0 Beta.
- Clicks can be monitored
- Can promote "Unlikely" XSS vulnerabilities
- Prior to 1.8.1.9 Noscript was vulnerable
- CSRF protection using nonces can often be overcome

■ Ronald's flash settings manager subversion...

This is a non-malicious proof of concept based upon clickjacking, this poc leverages all security settings, which allow cross domain access. Please do notice that once you checked, your Flash settings will allow for cross domain access! to un-check go to this page: <u>undo flash settings</u> credits: Robert Hansen, Jeremiah Grossman, PDP, rvdh
Login please
Hello! welcome back!
username: test
password:
Do you want to remember your login? please check to allow: ○ ☑ Always allow
Login!

Typical security dialog...



■ PDP's version…

All your sites are belong to us!

Do you allow AJAX?

AJAX will improve your user experience!

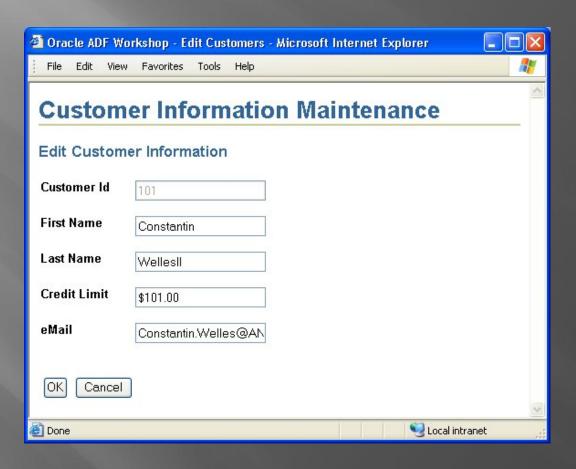
🔲 Never ask again



Demo time...



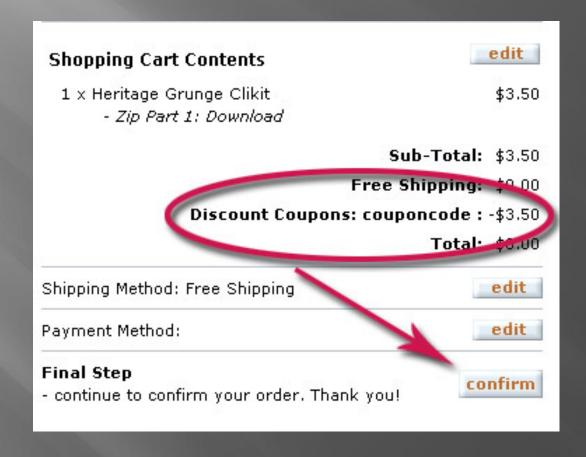
Oracle Webforms



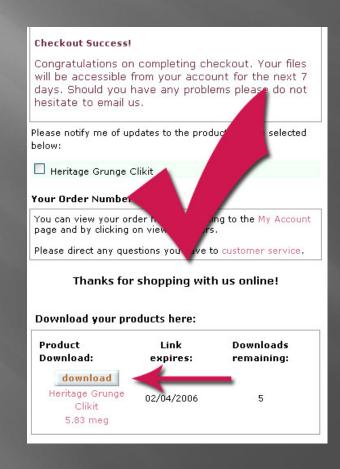
Delete User Accounts

Sub-Accounts 1			
NAME	MEMBER ID/EMAIL ADDRESS		
mike tadlo	miket@verizon.net	(Delete)	
Chris Miller	chris9441@veriz	(Delete)	
Jan Miller	jan9441@verizon	(Delete)	
Curran Smi	curran9721@veriz	(Delete)	

Auto-purchase



Auto download



Buy stocks

Date	06/06/2007	Order Status	
Time	07:38 AM	Preferred ECN	AUTO
Details			Buy PCU 1 Share Market N/A DAY Estimated total cost \$91.73
Quote CANCEL ORDER SEND ORDER			oration Common Stock (PCU:NYSE) k 91.73 Last trade 91.73

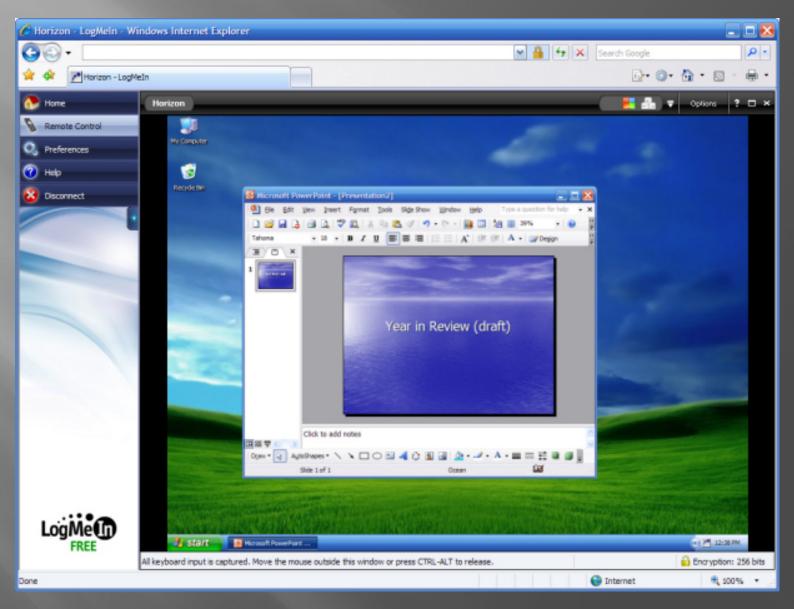
Auto-call



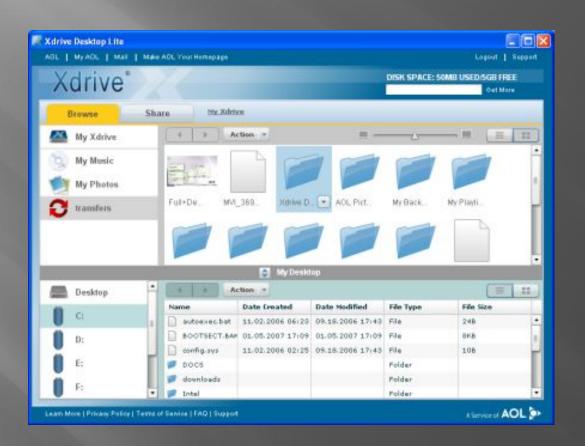
Webex/Meetingplace



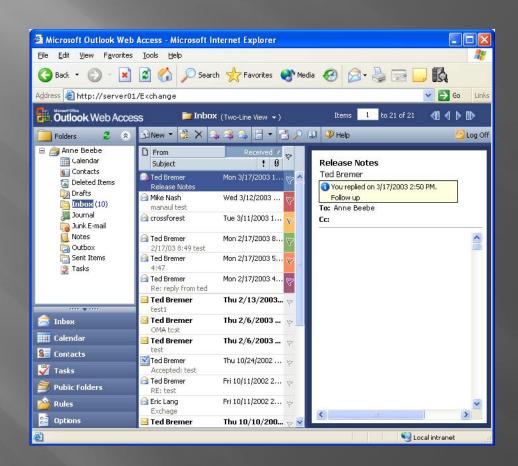
Logmein



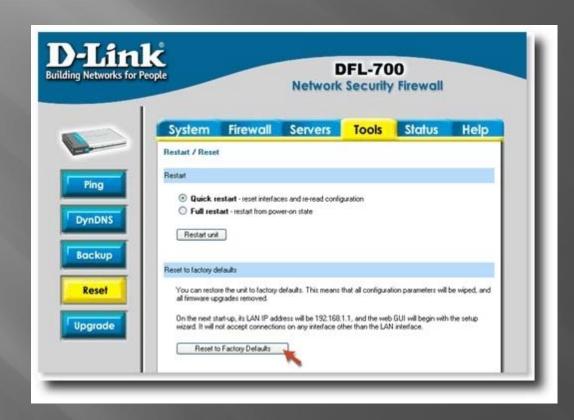
XDrive



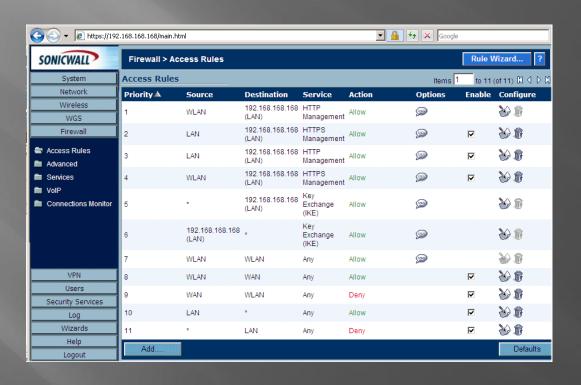
OWA



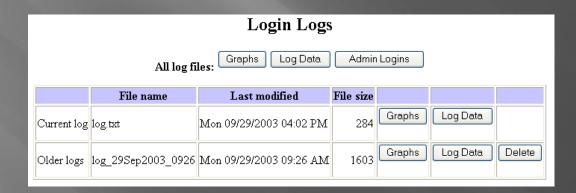
Router Reset



Delete Firewall Rules



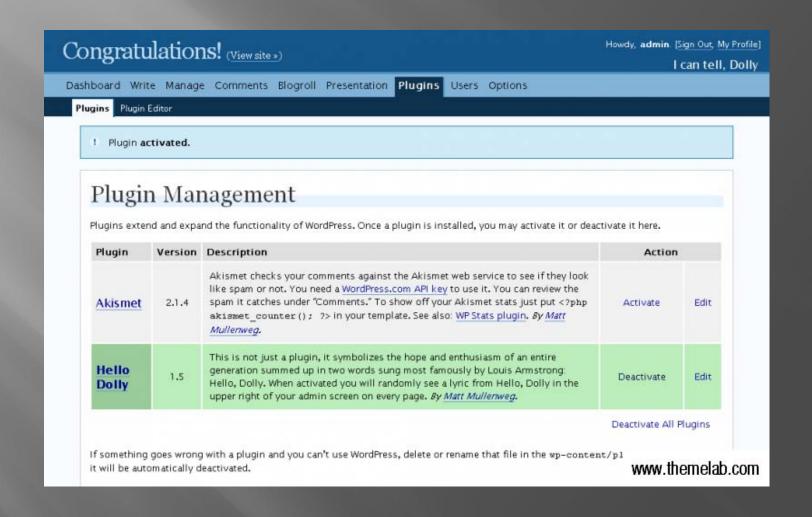
Delete Logs



Make Your Profile Public

Wh	o Can View My Full Profile
0	My Friends Only
•	Public
0	Only Users Over 18
Priv	vacy Settings
	Friend Requests - Require email or last name
	Comments - approve before posting
	Hide Online Now
	Show My Birthday to my Friends 🚡
	Photos - No Forwarding
	Blog Comments - Friends Only
	Friend Requests - No Bands
	Block Users Under 18 From Contacting Me

Deactivate Wordpress Plugins



Digg

Demo time...



Twitter



Add Friends on Orkut



MySpace



Flashblock



Clickjacking 101

- Use Noscript++/Upgrade Flash
- Fix the browsers (all of them)
- Put tape over your video camera







Thank you!

- Robert Hansen
 - http://www.sectheory.com the company
 - http://ha.ckers.org the lab
 - http://sla.ckers.org the forum
 - XSS Exploits the book
 - robert_aT_sectheory_d0t_org the email

