University of BRISTOL

Computer System- B Security

Introduction to Web Security P2

Cookies, session IDs, Phishing (URL obfuscation)

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HTTP vs HTTPS

- HTTP send request/response in clear text
  - Information can be sniffed (confidentiality is lost)
- We do not know if we are connected to the right server
  - Identity/authenticity is not variable.
- HTTPS (secure) solves this by using crypto.
  - Encryption
  - Signature
  - MAC
- Example: SSL/TSL (later in the unit)

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- Thus, a class of attacks known as session hijacking

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- Use HTTPS.

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- SOP policy is applicable to who access the cookies
- Contains sensitive information!

Session Hijacking

- Leakage of HTTP session information may lead to an attack called *session hijacking.*
  - Stealing of session ID/cookies allows an attacker to impersonate an ongoing session
  - Replay of a session to repeat some important action.

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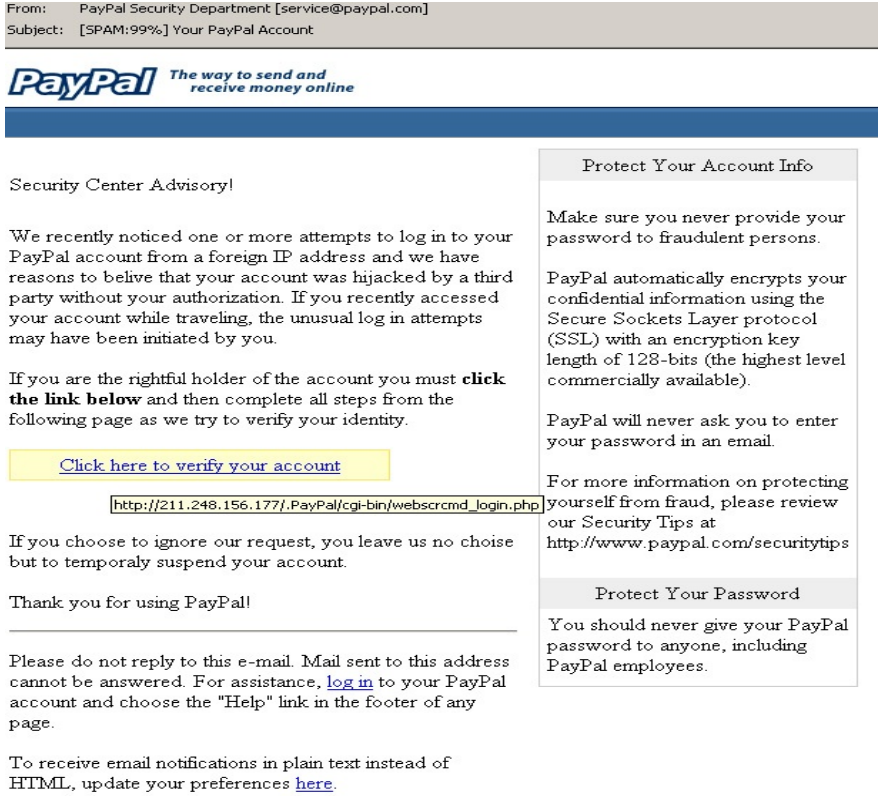


From: PayPal Security Department [service@paypal.com]
Subject: [SPAM:99%] Your PayPal Account

PayPal The way to send and receive money online

Security Center Advisory!

We recently noticed one or more attempts to log in to your PayPal account from a foreign IP address and we have reasons to belive that your account was hijacked by a third party without your authorization. If you recently accessed your account while traveling, the unusual log in attempts may have been initiated by you.

If you are the rightful holder of the account you must **click the link below** and then complete all steps from the following page as we try to verify your identity.

Click here to verify your account

http://211.248.156.177/.PayPal/cgi-bin/webscrcmd_login.php

If you choose to ignore our request, you leave us no choise but to temporaly suspend your account.

Thank you for using PayPal!

Please do not reply to this e-mail. Mail sent to this address cannot be answered. For assistance, log in to your PayPal account and choose the "Help" link in the footer of any page.

To receive email notifications in plain text instead of HTML, update your preferences here.

Protect Your Account Info

Make sure you never provide your password to fraudulent persons.

PayPal automatically encrypts your confidential information using the Secure Sockets Layer protocol (SSL) with an encryption key length of 128-bits (the highest level commercially available).

PayPal will never ask you to enter your password in an email.

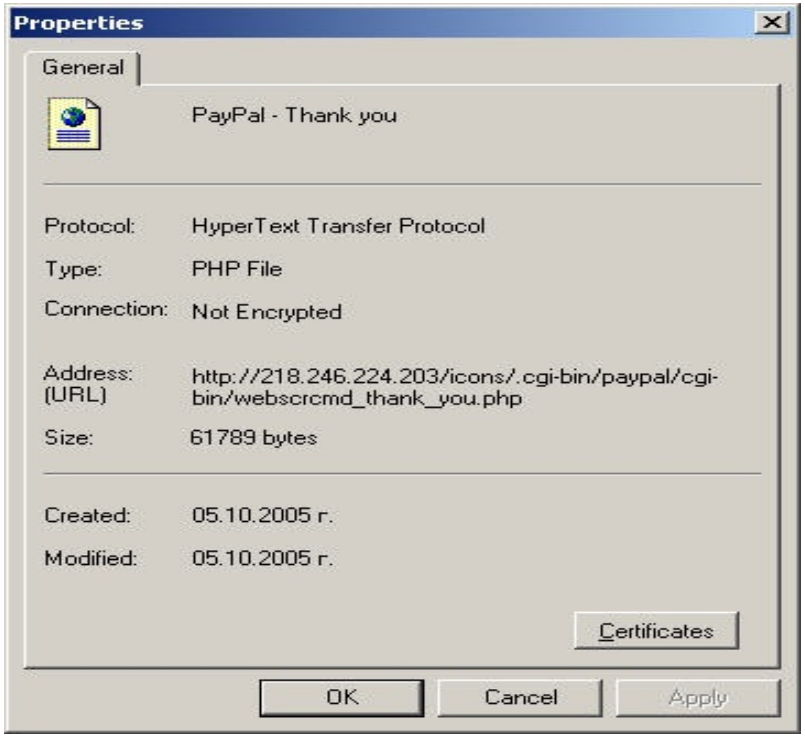
For more information on protecting yourself from fraud, please review our Security Tips at http://www.paypal.com/securitytips

Protect Your Password

You should never give your PayPal password to anyone, including PayPal employees.

URL Obfuscation

- Properties of page in previous slide
  - Actual URL different from spoofed URL displayed in address bar
- URL escape character attack
  - Old versions of Internet Explorer did not display anything past the Esc or null character
  - Displayed vs. actual site http://trusted.com%01%00@malicious.com
- Unicode attack
  - Domains names with Unicode characters can be registered
  - Identical, or very similar, graphic rendering for some characters
  - E.g., Cyrillic and Latin “p”
  - Phishing attack on paypal.com



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- `<a onMouseUp=window.open("http://www.evilsite.com") href="http://www.trustedsite.com/">Trust me!</a>`