

Information Security

Sandeep Mudalkar
Founder & CEO of Sytech Labs &
Cyber Crime Investigator/Consultant
Hyderabad.

Viruses, Bots, and Phish, Oh My!

- **What is Information Security?**
- **Why is it Important?**
- **What Can We Do?**

Viruses, Bots, and Phish, Oh My!

What Is Information Security?

- Deals with several different "trust" aspects of information and its protection
- The U.S. Government's [National Information Assurance Glossary](#) defines **INFOSEC** as:

“Protection of information systems against unauthorized access to or modification of information, whether in storage, processing or transit, and against the denial of service to authorized users or the provision of service to unauthorized users, including those measures necessary to detect, document, and counter such threats.”

Viruses, Bots, and Phish, Oh My!

What Is Information Security?

- Three widely accepted elements or areas of focus (referred to as the “CIA Triad”):
 - Confidentiality
 - Integrity
 - Availability (Recoverability)
- Includes Physical Security as well as Electronic

Definitions

Malware:

- Hostile, intrusive, or annoying software or program code ("maliciousHostile, intrusive, or annoying software or program code ("malicious" + "software“)
- Includes computer viruses, worms, trojan horses, bots, spyware, adware, etc
- Software is considered malware based on the intent of the creator rather than any particular features

Definitions

Internet bot:

- also known as **web robots**, are automated internet applications controlled by software agents
- These bots interact with network services intended for people, carrying out monotonous tasks and behaving in a humanlike manner (i.e., computer game bot)
- Bots can gather information, reply to queries, provide entertainment, and serve commercial purposes.
- Botnet - a network of "zombie" computers used to do automated tasks such as spamming or reversing spamming

Definitions

Adware:

- **Advertising-supported software** is any software package which automatically plays, displays, or downloads advertising material to a computer after the software is installed on it or while the application is being used.
- Adware is software integrated into or bundled with a program, typically as a way to recover programming development costs through advertising income

Definitions

Spyware:

- A broad category of software designed to intercept or take partial control of a computer's operation without the informed consent of that machine's owner or legitimate user
- In simpler terms, spyware is a type of program that watches what users do with their computer and then sends that information over the internet

Definitions

Spyware:

- Spyware can collect many different types of information about a user:
 - Records the types of websites a user visits
 - Records what is typed by the user to intercept passwords or credit card numbers
 - Used to launch “pop up” advertisements
- Many legitimate companies incorporate forms of spyware into their software for purposes of advertisement(Adware)

Spyware Example

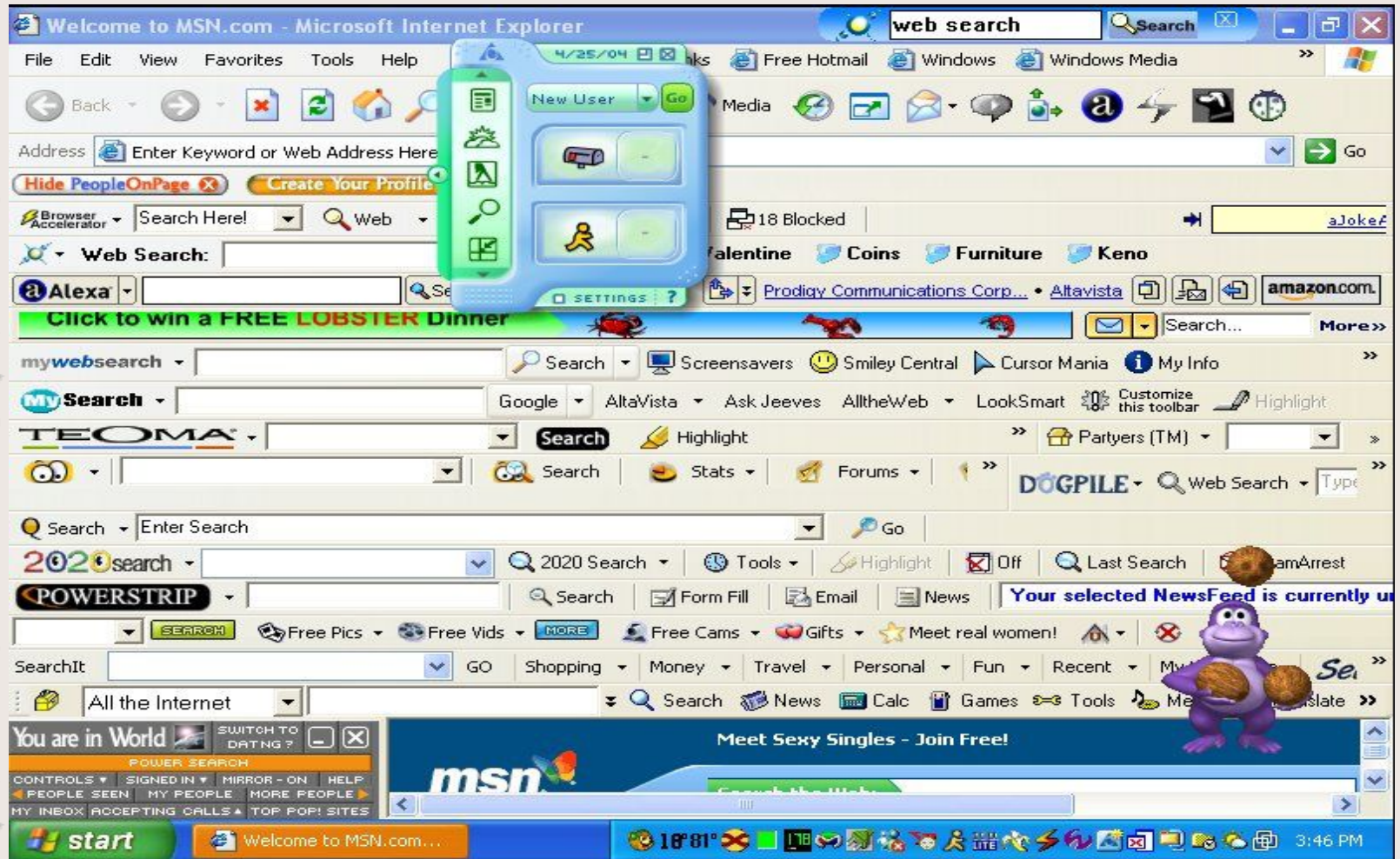
The screenshot shows a Microsoft Internet Explorer browser window. The address bar displays `http://daylight-outbreak.blogspot.com`. The page content includes a Blogger header, a large orange banner with the text "Yes I hear you, yes, your voice...It reaches the world inside me...", and a sidebar with an "About Me" section. The "About Me" section features a profile picture of a woman and the following text: "Name: Muhammad Ismail", "Location: Singapore, Hougang, Singapore". The main content area shows the date "Sunday, February 20, 2005" and a heading "Not feeling well, again." followed by the text "Well, as the heading goes, I am not feeling so well. I have not".

A "Security Warning" dialog box is overlaid on the page. The dialog box contains the following text: "Do you want to install and run 'YOU have an OUT OF DATE browser which can cause you to get infected with viruses, spam and spyware. To prevent this press YES now' signed on an unknown date/time and distributed by: [Entermet Media Inc.](#) Publisher authenticity verified by VeriSign Class 3 Code Signing 2001 CA. Caution: Entermet Media Inc. asserts that this content is safe. You should only install/view this content if you trust Entermet Media Inc. to make that assertion." Below the text is a checkbox labeled "Always trust content from Entermet Media Inc." and three buttons: "Yes", "No", and "More Info".

The taskbar at the bottom shows the Start button, several application icons, and the system tray displaying the time "9:51 AM".

Spyware Example

(add-on toolbars)



Definitions

Spam:

- **Spamming** is the abuse of electronic messaging systems to send unsolicited, undesired bulk messages
- Spam media includes:
 - e-mail spam (most widely recognized form)
 - instant messaging spam
 - Usenet newsgroup spam
 - Web search engine spam
 - spam in blogs
 - mobile phone messaging spam

Spam Example

Search: Status: Any Status

Subject	Sender	Date
check this out man...	Nelda Romano	Thursday 14:59:37
Help me!	Osvaldo MANNING	Thursday 12:47:59
Have Arthritis pains? There is help for you.	Orsa	Thursday 03:45:36
down on her, and	Reginald Stubbs	Wednesday 06:02:05
natural enlargement	diane george	Tuesday 16:37:15
No Subject	fabian dickhaut	Monday 10:38:59
only Youngest have Shocking sexuality other	Kristie Sapp	Monday 01:07:32
Reduces stress	frankie kim	06.02.2005 16:27
PERSONAL	esnol2005	06.02.2005 04:56
We need to render the delight of having the finest	Clotilda Gadnunqt	06.02.2005 02:10
Find more sawings online	kennith draper	05.02.2005 22:30
faster cheaper meds	Lidia White	05.02.2005 16:37
Breaking News	Dee H. Edwardsd	05.02.2005 14:40
We have your wanted meds at low prices only.	lucien hyatt	04.02.2005 06:59
100% zum einladen__1679438	Isel Rios	03.02.2005 03:34
Enjoy your wanted meds.	tracey uliano	03.02.2005 02:28
Confirm Your Washington Mutual Online Banking	Washington Mutual On...	02.02.2005 22:03
out P1NNACCLE SYSTEM, MACRO0MEDIA, SYMANTEEC, PC GAMES, ...	Valerie Ileen	02.02.2005 19:11
Finished	Cecilia Fuller	02.02.2005 05:57
You can save more thru ordering meds on our site.	mel sevick	02.02.2005 01:21
The most insane action	Katrina Souza	31.01.2005 08:19
You don't have to be fat Noel	Kristin	28.01.2005 03:22

Definitions

Phishing:

- A criminal activity using social engineering techniques.
- An attempt to acquire sensitive data, such as passwords and credit card details, by masquerading as a trustworthy person or business in an electronic communication.
- Typically carried out using email Typically carried out using email or an instant message

Phishing Example



Dear valued customer of TrustedBank,

We have recieved notice that you have recently attempted to withdraw the following amount from your checking account while in another country: \$135.25.

If this information is not correct, someone unknown may have access to your account. As a safety measure, please visit our website via the link below to verify your personal information:

<http://www.trustedbank.com/general/custverifyinfo.asp>

Points to "bad" IP
Address!

Once you have done this, our fraud department will work to resolve this discrepancy. We are happy you have chosen us to do business with.

Thank you,
TrustedBank

Member FDIC © 2005 TrustedBank, Inc.

Definitions

Keystroke Logging:

- Keystroke logging (often called keylogging) is a diagnostic used in software development that captures the user's keystrokes
 - Useful to determine sources of error in computer programs
 - Used to measure employee productivity on certain clerical tasks
- Highly useful for law enforcement and espionage
 - Obtain passwords or encryption keys and thus bypassing other security measures
- Widely available on the internet and can be used by anyone for the same purposes

Definitions

Keystroke Logging:

- Can be achieved by both hardware and software means
- Hardware key loggers are commercially available devices which come in three types:
 - Inline devices that are attached to the keyboard cable
 - Devices installed inside standard keyboards
 - Keyboards that contain the key logger already built-in
- Writing software applications for keylogging is trivial, and like any computer program can be distributed as malware (virus, trojan, etc.)

Keylogger Example

In-line hardware Keylogger



Viruses, Bots, and Phish, Oh My!

Why is it Important?

- Over the last two years, the IT security threat landscape has changed significantly.
- Traditional malware threats hit an apparent wall in 2005
- However new threats (bots, spam, phishing) have stepped into the void.
- Remember the objective - the “CIA Triad” :
 - Confidentiality
 - Integrity
 - Availability (Recoverability)

Viruses, Bots, and Phish, Oh My!

Why is it Important?

- Unauthorized access (malware, spyware) limits our ability to protect the confidentiality of the data
- Malicious programs can alter the data values, destroying the integrity of the data
- Denial of Service (DoS) attacks can shut down a server and/or network, making the system unavailable.
- Efforts to correct costs corporations time and money!

Viruses, Bots, and Phish, Oh My!

Why is it Important?

- There were on average over eight million phishing attempts per day during the latter half of 2005 (Symantec)
- The California legislature found that spam cost United States organizations alone more than \$10 billion in 2004, including lost productivity and the additional equipment, software, and manpower needed to combat the problem.

Viruses, Bots, and Phish, Oh My!

Why is it Important?

- Regulatory Issues:
 - HIPAA (electronic personal identifiable information)
 - Sarbanes-Oxley Act (federal securities law focused on data accuracy and integrity)
 - PCI Security (Payment Card Industry security measures)
- Potential/Growing Issues:
 - Liability for damage caused by bot-nets
 - Loss of corporate confidential information (financials, personnel)
 - Electronic Blackmail

Viruses, Bots, and Phish, Oh My!

What Can We Do?

- Security Assessment
 - Identify areas of risk
 - Identify potential for security breaches, collapses
 - Identify steps to mitigate
- Security Application
 - Expert knowledge (train, hire, other)
 - Multi-layered Approach (there is no single solution)
 - Policies and Procedures

Viruses, Bots, and Phish, Oh My!

What Can We Do?

- Security Awareness
 - Not just for the geeks!
 - Security Training at all levels (external and/or internal)
 - Continuing education and awareness – not a one-time shot!
 - Make it part of the culture

Viruses, Bots, and Phish, Oh My!

Key Takeaways:

- Objective of InfoSec is *Confidentiality, Integrity and Availability*...protect your systems and your data
- Threats are numerous, evolving, and their impact is costly
- Security should be applied in layers (“road blocks”)
- Security Awareness at all levels must be maintained
- Failure to Secure is an Opportunity to Fail

A spiral-bound notebook with a light beige, textured cover. The metal spiral binding is visible on the left side. The text is centered on the cover.

Information Security

Questions?