

## Where Internet Threats Fit in the Overall Security Picture

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## Agenda

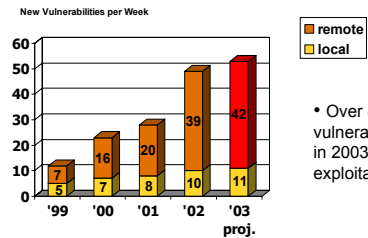
1. Trends in Vulnerabilities & Malicious Code
2. Threat life cycles, propagation and severity
3. Leadership, what do we need moving forward?
4. Greater Vigilance is needed
5. Vulnerability Disclosure and labeling
6. Richard Clark Intro
7. Conclusion

## Trends in the threat landscape – Vulnerabilities and Malicious Code

- The way we speak about and think of Malicious Code is changing. Malicious Code is now largely synonymous with Software Vulnerabilities and vice versa.
- In order to gauge one we must understand and be able to gauge the other.

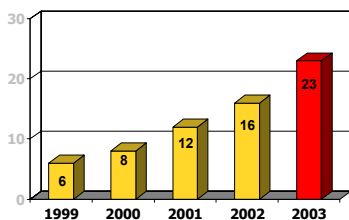
## Vulnerability Trends

Vulnerability Research is now being focused on remote exploitability



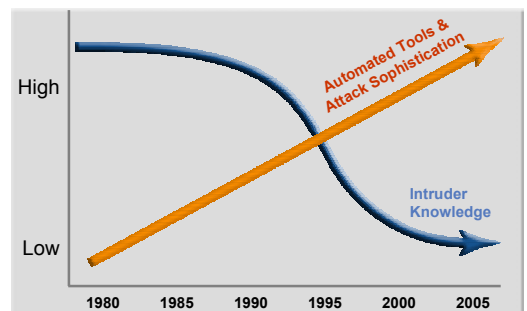
## Vulnerability Trends

Discovery of high impact vulnerabilities which result in full system compromise is rising



- High impact issues for Windows operating systems


## Vulnerability Trends



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## Vulnerability Trends

- CORE IMPACT
- CANVAS




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## OpenSource Exploitation Frameworks

- MetaSploit




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## OpenSource Exploitation Frameworks

- InlineLibEgg

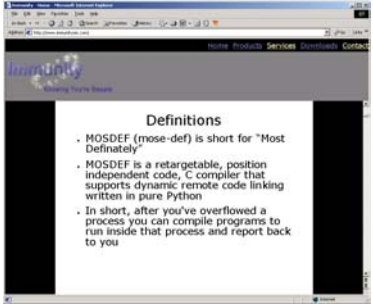


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## OpenSource Exploitation Frameworks

- MOSDEF




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## Vulnerability Threat Evolution: Day-Zero Threats

A day-zero threat exploits a previously unknown, and therefore unprotected vulnerability.




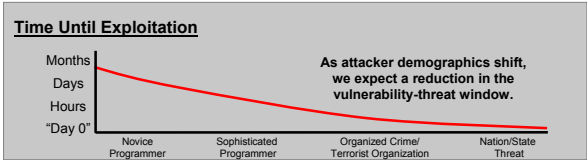
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## Vulnerability Threat Evolution: Day-Zero Threats

A day-zero threat exploits a previously unknown, and therefore unprotected vulnerability.

Day-zero exploit

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## Malicious Code Trends

- On the Rise
  - Windows32 - Win32 Viruses/Worms have increased by 123% for 1H 2003 compared to 1H 2002
  - Instant Messaging (IM)/Peer-to-Peer (P2P) Networks viruses and worms have increased by 400% during 1H 2003
  - Malicious Code is now being used to target particular demographics.
  - Submissions of Malicious Code to Symantec containing backdoors has risen by 50%.

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## Malicious Code Trends

- In the wild (HoneyNet Activity)
  - Since September 1/03 to current the Symantec HoneyNet has captured 75 previously unidentified viruses
  - With an average of 90 infections a day 25% of those are pre-infected
  - Up to 35% of the infections are a result of automated Bot networks using worms or auto-routers to expand their networks
  - Windows compromises outshadow Linux compromises by a 40 to 1 basis. Even when both machines are vulnerable to well known problems

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## Malicious Code Trends

**New Documented Win32 Viruses and Worms**  
(January 1, 2001 - June 30, 2003)

Six Month Period	New Documented Win32 Viruses and Worms
Jan - Apr 2001	308
July - Dec 2001	433
Jan - Jun 2002	460
July - Dec 2002	687
Jan - Jun 2003	994

Source: Symantec Corporation

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## Overall Threat Evolution

Contagion Timeframe

Seconds

Minutes

Hours

Days

Weeks or months

Class III  
Human response: *impossible*  
Automated response: *unlikely*  
Proactive blocking: *possible*

Class II  
Human response: *difficult/impossible*  
Automated response: *possible*

Class I  
Human response: *possible*

Early 1990s

Mid 1990s

Late 1990s

2000

2003

Time

File Viruses

Macro Viruses

e-mail Worms

Blended Threats

"Warhol" Threats

"Flash" Threats

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## The acceleration of threats and their lifecycle

- Code Red and Nimda were destructive, but fairly slow
- Code Red took about 12 hours for most of its spread
- Klez traveled around the world in 2.5 hours
- Slammer infected 75,000 hosts in ten minutes
- Threat landscape is shifting toward more complex, fast-spreading attacks

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## The acceleration of threats and their lifecycle

- Threats such as CodeRed & CodeRedII are still seen in large numbers. Including newly infected systems
- New computers which are not patched up to current levels contribute heavily to the problem
- Average life expectancy for an unpatched Windows system newly connected to the Internet is less than 15 minutes (average) before infected with malware

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## The acceleration of threats and their lifecycle

**Event Summary**  
Oct 28 2003 00:00 - Nov 10 2003 23:59

**symantec DeepSight Threat Management System**

**IDS**

IDS	Description	#(%)
1	Generic SMTP/ELO Buffer Overflow Attack	54153
2	SQLExp Incoming Worm Attack	50894
3	Muhammad A. Mogil Count Up Attack	24967
4	Generic Win2K/XP Headers Disclosure Transfer F/HTTP Header Request Attack	17165
5	Microsoft Windows DCOM RPC Interface Buffer Overflow Attack	12306
6	Generic SMTP Relay To Command Attack	6551
7	Generic HTTP Directory Traversal Attack	6043
8	Microsoft Exchange Server Extensions Path Disclosure Attack	5814
9	Generic HTTP Server CGI Attack	4847
10	Microsoft Exchange Message Postbox Attack	4203
11	Microsoft Checked Existing Transfer Heap Overflow Attack	3606
12	Generic XRM Buffer Overflow (aka:MS NCF) Attack	3402
13	Generic XRM Buffer Overflow (TCP/NCF) Attack	3403
14	Generic POP3 Buffer Overflow Attack	2875
15	Sendmail Address Precision Memory Corruption Attack	2789

**Slammer** Jan/25/03

**Blaster** Aug/11/03

**Code Red** Jul/11/01  
& **Nimda** Sep/18/01

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## The acceleration of threats and their lifecycle

These issues are made worse by end users still suffering from easily addressed security issues:

- 18% report NetBIOS vulnerabilities
- 49% report a browser privacy vulnerabilities
- 26% are still not running antivirus software
- 6% report a virus or Trojan horse infections

Source: Over 2.4 million results submitted to Symantec Security Check website.  
All statistics are as of January 2003

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## Increasing pressure on security resources

This chart shows the number of IP addresses attacking a typical 600 node network over the last year. This problem has become a security challenge for businesses of all sizes. The number of attackers, this number did not change during any of the outbreaks.

Source data from the DeepSight Incident Database

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## Importance of strong leadership

- This problem cannot be solved in technology alone
  - Large scale education is required in order to make this problem approachable. This must be done both by Government and Private Enterprise
  - Government should be funding education for students, both post secondary and otherwise
  - Corporation need to educate their staff
  - Regional and National ISP's need to start being held accountable for what comes out of their address space
  - Operating System vendors must be more vigilant with their coding practices

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## Greater vigilance is needed.....

- Corporate IT Security needs to be considered an infrastructure cost, not simply an IT line item
- Corporate IT Staffing should be commensurate with the size of the assets managed and their relative importance to national infrastructure
- Government funded ISAC's and Critical National Infrastructure initiatives should be seen in every sovereign state with an Internet presence

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## Vulnerability Disclosure

- What are common views on disclosure?
  - Full Disclosure
  - Responsible Disclosure
  - Anti Disclosure

"I can tell you I wish those people just would be quiet. It would be best for the world. That's not going to happen, so we have to work in the right fashion with these security researchers," – Steve Ballmer, Microsoft's Worldwide Partner Conference in New Orleans.

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## Vulnerability Labeling

- Poses a serious problem in terms of vendor conformance
  - For Software Vulnerabilities each vendor generally names the threat a different name, virus names largely share the same problem
  - This is again compounded by the threat being referred to again by altogether different names in NIDS', HIDS', vulnerability scanners, alerting services and SIM's.
  - These names are further complicated by being almost exclusively in English

## Vulnerability Labeling

- Initiatives to solve this problem:
  - MITRE CVE (Common Vulnerabilities & Exposures)
  - MITRE CIEL (Common Intrusion Event List)
  - MITRE OVAL (Open Vulnerability Assessment Language)
  - Bugtraq ID

## Removing the roadblock

Introduce Richard Clarke for his presentation on:

What are some concrete steps that can be taken to remove the roadblock that are preventing the IT Revolution from achieving its full potential?

## Conclusion

- Include one slide to summarize