New Technologies for Cyber Security

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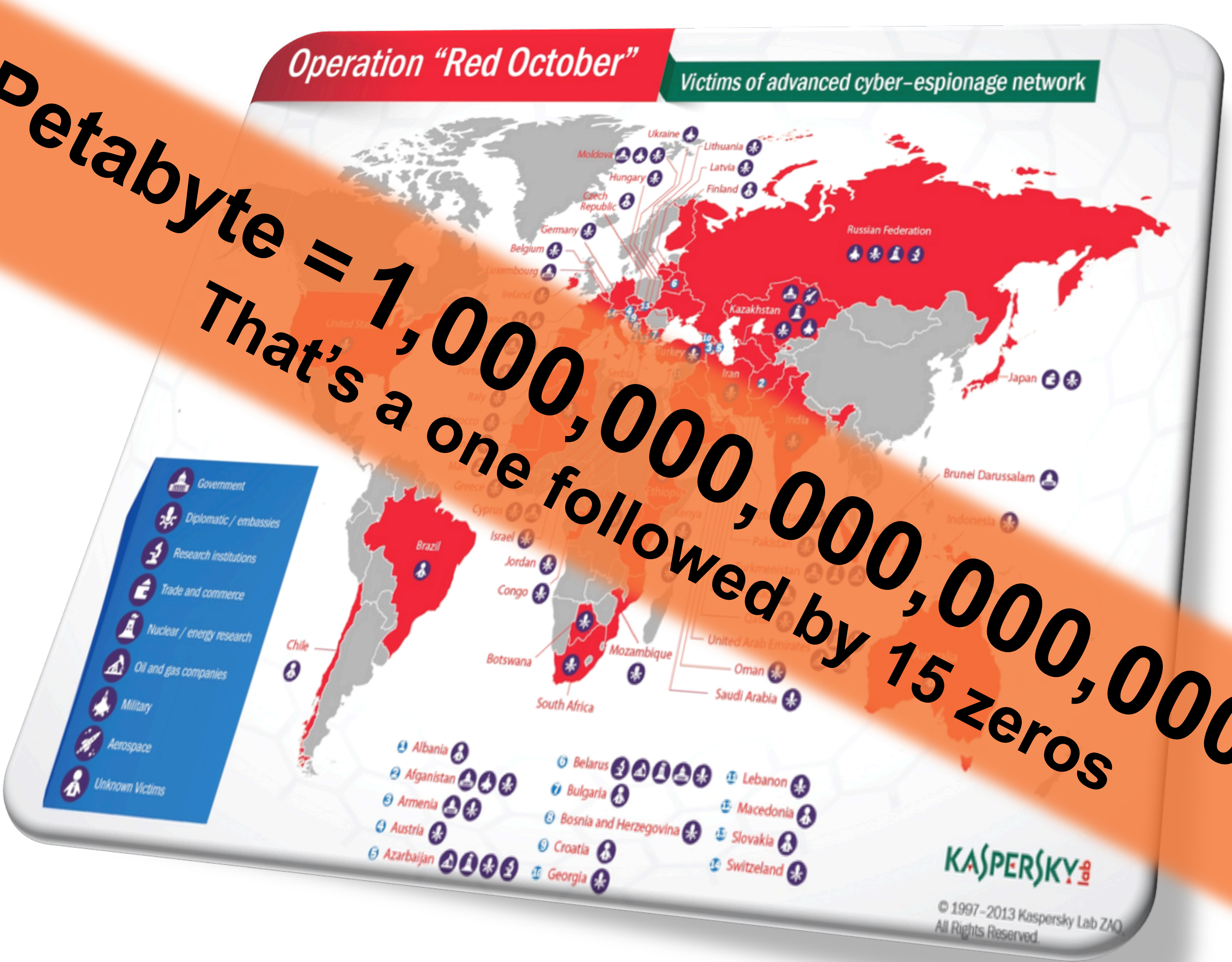
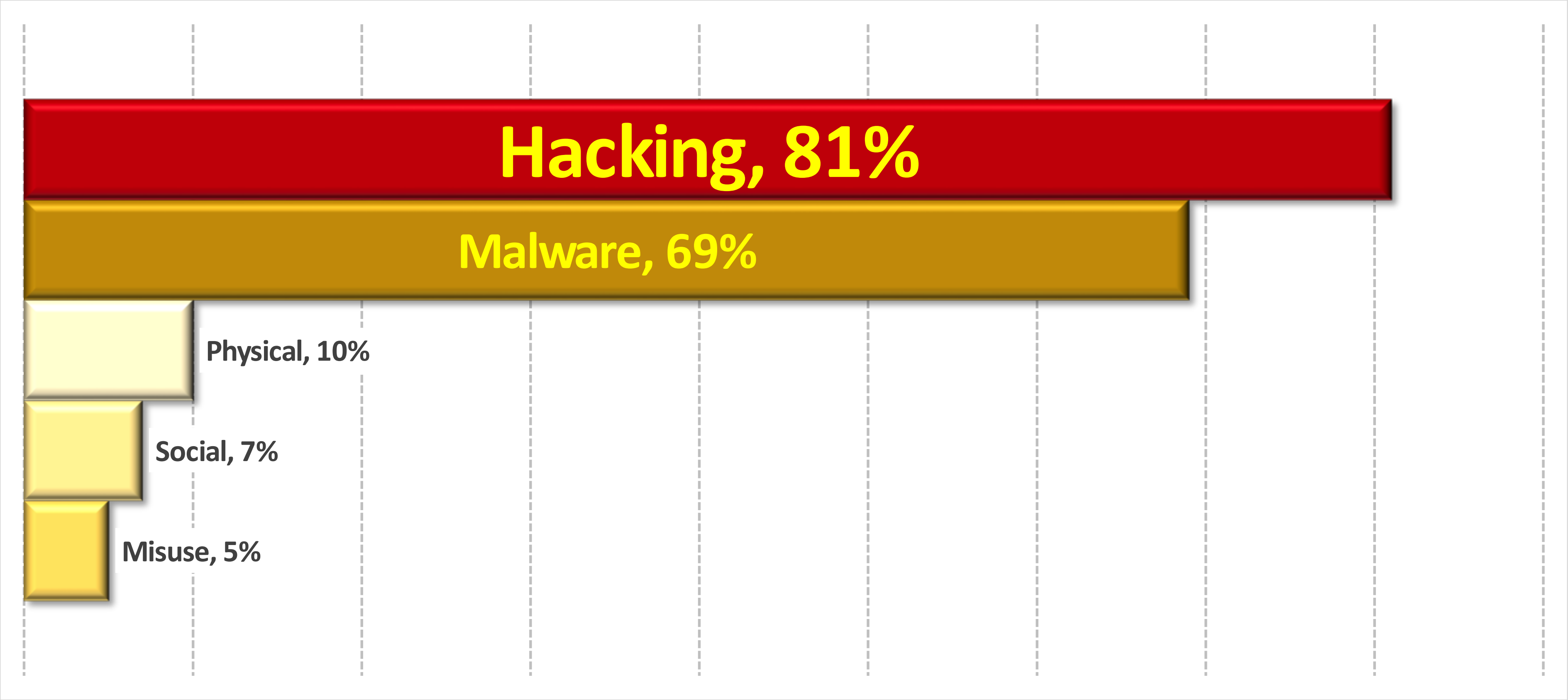


1 Petabyte = 1,000,000,000,000,000 Bytes

That's a one followed by 15 zeros

How Do Breaches Occur?



2012 DATA BREACH INVESTIGATIONS REPORT
A study conducted by the Verizon RISK Team with cooperation from the Australian Federal Police, Dutch National High Tech Crime Unit, Irish Reporting and Information Security Service, Police Central e-Crime Unit, and United States Secret Service.

Australian Government
Department of Defence
Intelligence and Security

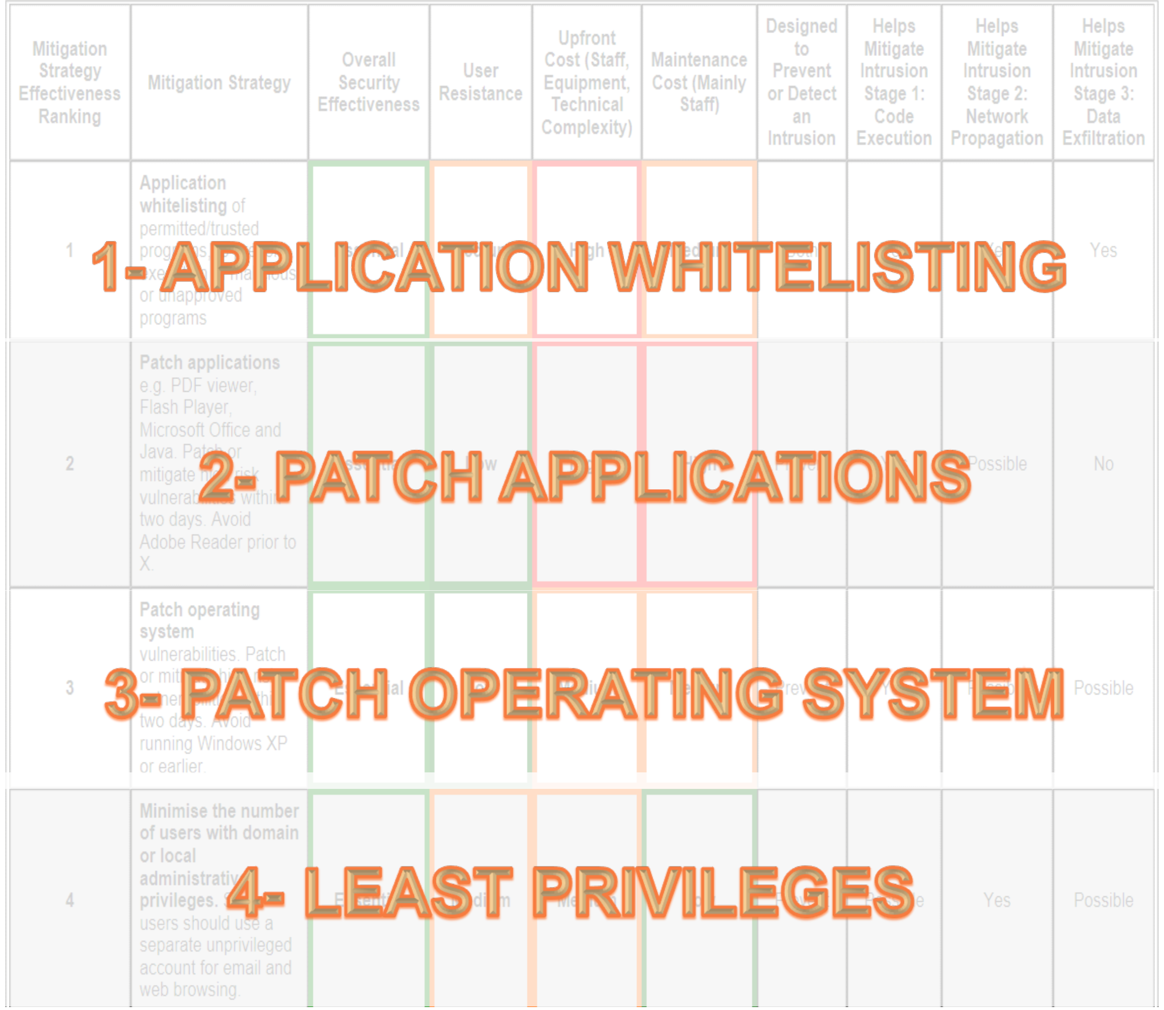
Defence Signals Directorate
Reveal Their Secrets - Protect Our Own

Strategies to Mitigate Targeted Cyber Intrusions

Australia Becomes First Nation To Discover Reliable Method of Stopping Targeted Attacks (October 30 & 31, 2012)

…. implementing just the top four strategies can block 85% of targeted cyber attacks

http://www.dsd.gov.au/infosec/top-mitigations/top35mitigationstrategies-list.htm



Mitigation Strategy Effectiveness Ranking	Mitigation Strategy	Overall Security Effectiveness	User Resistance	Upfront Cost (Staff, Equipment, Technical Complexity)	Maintenance Cost (Mainly Staff)	Designed to Prevent or Detect an Intrusion	Helps Mitigate Intrusion Stage 1: Code Execution	Helps Mitigate Intrusion Stage 2: Network Propagation	Helps Mitigate Intrusion Stage 3: Data Exfiltration
1	**Application whitelisting** of permitted/trusted programs, to prevent execution of malicious or unapproved programs	Essential	Medium	High	Medium	Both	Yes	Yes	Yes
2	**Patch applications** e.g. PDF viewer, Flash Player, Microsoft Office and Java. Patch or mitigate high risk vulnerabilities within two days. Avoid Adobe Reader prior to X.	Essential	Low	High	High	Prevent	Yes	Possible	No
3	**Patch operating system** vulnerabilities. Patch or mitigate high risk vulnerabilities within two days. Avoid running Windows XP or earlier.	Essential	Low	Medium	Medium	Prevent	Yes	Possible	Possible
4	**Minimise the number of users with domain or local administrative privileges.** Such users should use a separate unprivileged account for email and web browsing.	Essential	Medium	Medium	Low	Prevent	Possible	Yes	Possible

1- APPLICATION WHITELISTING

2- PATCH APPLICATIONS

3- PATCH OPERATING SYSTEM

4- LEAST PRIVILEGES

Whitelisting

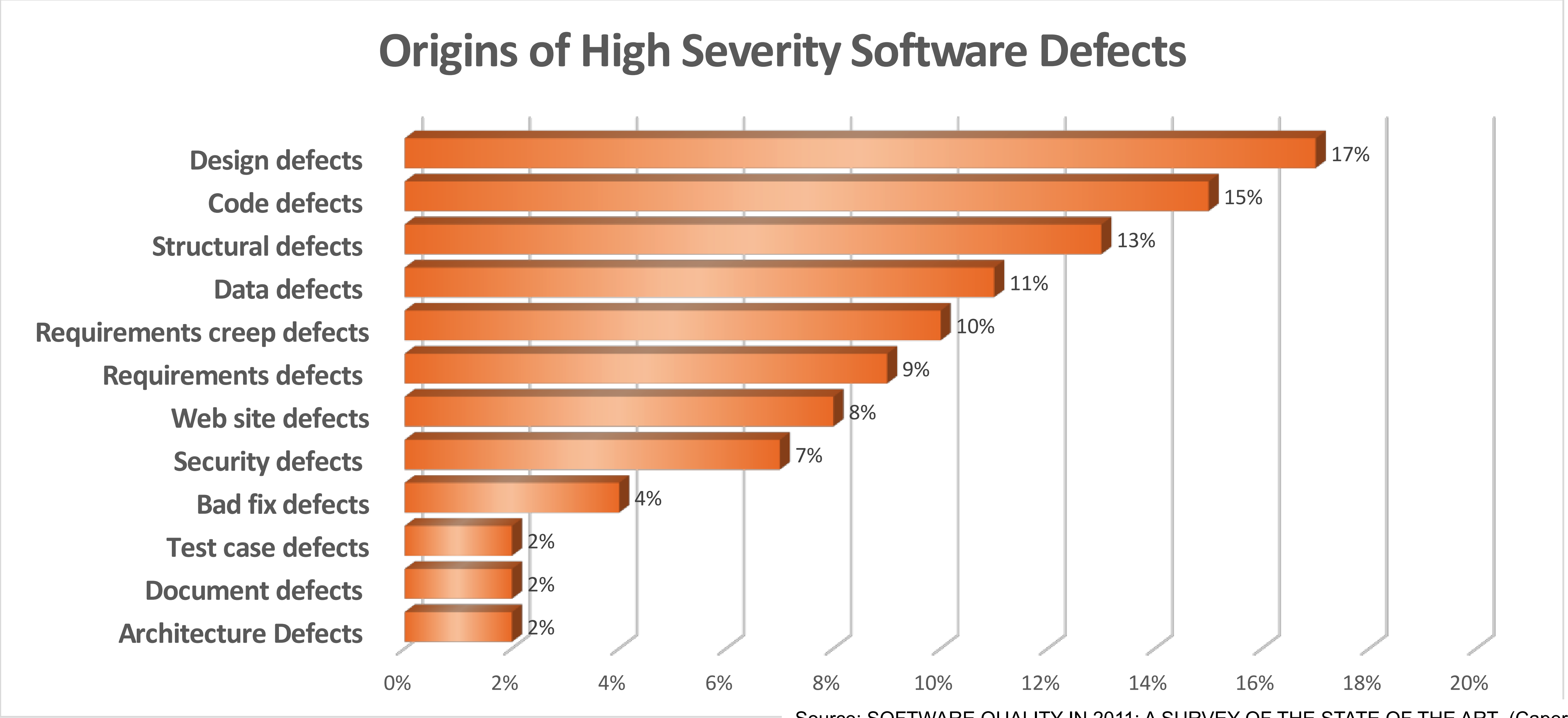
Applications

- Microsoft's Applocker
  - Windows 2008 & 2012
  - Windows 8 Pro

Communications

- Windows Firewall
  - All Current Versions of Windows
  - Enable Output Rules

All Software Has Bugs

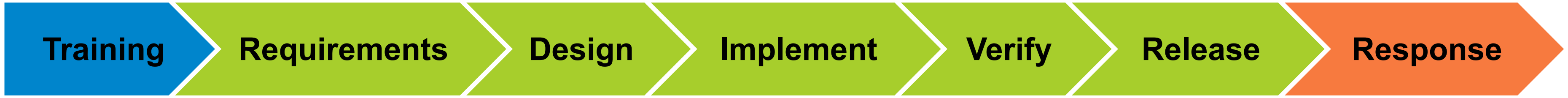


Source: SOFTWARE QUALITY IN 2011: A SURVEY OF THE STATE OF THE ART (Capers Jones)

Security Development Lifecycle

Essential Processes and Practices for:

- Reducing the Number of Vulnerabilities
- Reducing the Severity of Vulnerabilities
- Increasing the Resiliency of the Software
- Increasing the Reliability of the Software



Training → Requirements → Design → Implement → Verify → Release → Response

OSIsoft's Responsibility

Example: PI Server 2012

19 New Security Bugs Found and Fixed

Reduced exploitability (software resilience)

Buffer Overrun Detection

SEH - Safe Exception Handling Protection

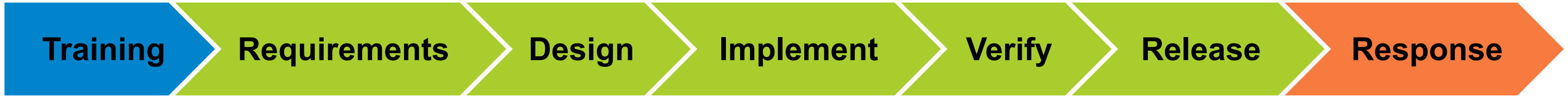
SEHOP – Structured Exception Handling Protection

DEP/NX – Data Execution Prevention and No eXecute

ASLR – Address Space Layout Randomization

Heap Metadata Protection

Continuous Improvement



Patch/Upgrade PI Software

- Each Revision Reduces Bugs
- 64 Bit Versions are more Secure
- PI Server 2012 Certified on Windows Core
- PI AF Server 2012 Tested on Windows Core
- MS SQL Server 2012 Certified on Windows Core

Patch/Upgrade OS

Servers (Running on Windows Core where possible)

- Windows 2012 or
- Windows 2008 R2

Clients

- Windows 8 or
- Windows 7

Windows OS retirement coming

(No further security updates from Microsoft)

- Windows XP support ends in April 2014
- Window Server 2003 support ends in July 2015

Windows Core

- No Graphical User Interface (GUI)
- No Graphic Based Applications
- Smaller Faster Code Base
- More Resources Available
- Fewer Patches Needed
- Less Maintenance
- Lower Total Cost of Ownership

Least Privileges

Do not use piadmin account

Use Windows Integrated Security (WIS)

Enable Windows User Account Control (UAC)

Create Users and Trusts based on Least Privileges

The Top 4

1: Use Whitelisting Techniques

2: Upgrade your PI Software

3: Upgrade your Operating System

Use Windows Server Core for Servers

4: Least Privileges

Additional Information

OSIsoft Links

Whitelisting guidance

For the latest in PI security use Search string “PI Security Best Practices” on the OSIsoft tech support web site; http://techsearch.osisoft.com/Pages/results.aspx?k=pi%20security%20best%20practices

KB00649: PI Server Support for Windows Server Core; http://techsupport.osisoft.com/Support+Solution/10/KB00649.htm

KB00354: Windows Security Requirements for PI Server 3.4.380.36 and later
http://techsupport.osisoft.com/Support+Solution/8/KB00354.htm

External links

Verizon - 2012 Data Breach Investigations Report:
http://www.verizonenterprise.com/resources/reports/rp_data-breach-investigations-report-2012_en_xg.pdf?__ct_return=1

Australian Defence Signals Directorate - Strategies to Mitigate Targeted Cyber Intrusions:
http://www.dsd.gov.au/infosec/top35mitigationstrategies.htm

Honeywell Whitepaper on Application Whitelisting:
http://www.controleng.com/fileadmin/content_files/ce/honeywell-iits-wp-application-whitelisting.pdf

EA Customers

Contact Your EPM or CoE to Learn More about Best Practice Availability

THANK YOU

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OSIsoft.

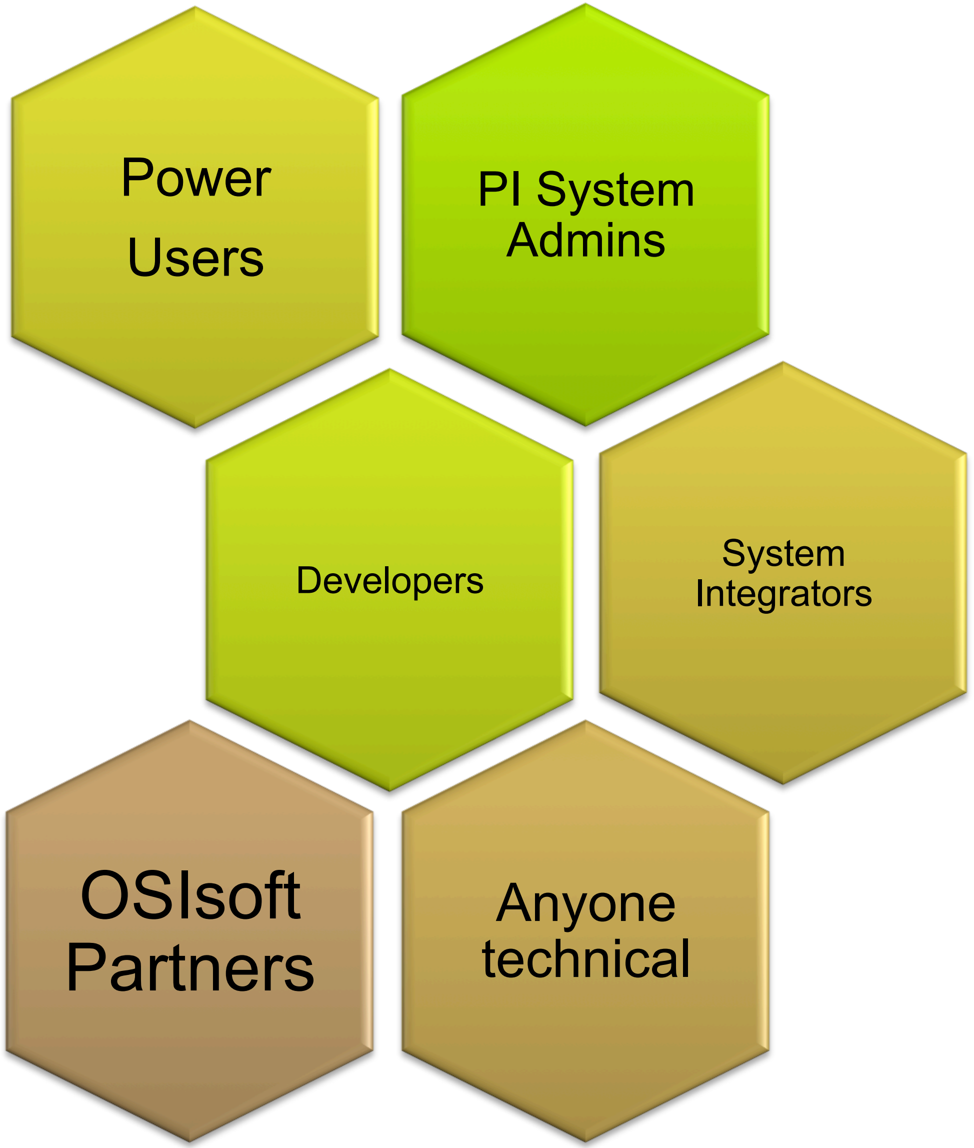
Get hands on knowledge of how to use and get value from the PI System

OSIsoft. DECEMBER 3 - 6, GRAND HYATT SAN FRANCISCO

vCampus Live! 2013

WHERE PI GEEKS MEET

SAVE THE DATE



Power Users

PI System Admins

Developers

System Integrators

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Anyone technical