Intel® Cyber-Security Briefing:
Trends, Solutions, and Opportunities

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Agenda

• Intel + McAfee: What it means
• Computing trends and security implications
• A new approach to improve cyber-security: *Hardware-enhanced Security*
• Examples of Hardware-assisted Security
• Opportunity for the *IT Community* to *Change The Game*
Innovation Opportunities by working with Intel and McAfee

- **Change the way we all think** about security problems and solutions
- **Innovate and Deliver** new levels of protection not available with software-only solutions, employing **hardware-enhanced security**
- **Deliver intelligence-in-depth**: Security that is integral to your hardware, network, systems, applications, and databases—and works together to protect your business

**Key Innovation Areas**

- Next-Gen Endpoint Security
- Secure Mobile Devices
- Secure Embedded Devices
- Cloud Security Platform
- Hardware Enhanced Security
As a consequence: The size of the “Attack Surface” and the opportunities for Malicious Entry have expanded.
People: The New Network Perimeter
Human Vulnerabilities and Risks

- Mobile Device Loss or Theft
- Corporate or Personal Stolen Credentials
- Online Collaboration Tools
- Social Networking Data
- Phishing Attacks and Spear Phishing

Humans make mistakes: Lost Devices, “Found” USB drives, etc.
Example of the Human Factor in Network Security: Vulnerability to “Candy Drops”

• US Dept. of Homeland “Candy Drop” Security test:* USB drives and disks were dropped in parking lots
  • 60% were inserted into company or agency computers
  • 90% were inserted if the USB drive or disk had an official logo

• Mobile and cloud storage alternatives: secure or not?

• Exploiting social media and human weaknesses

• Without adequate training, organizations risk workers being the “weakest link”

* Found thumb drives: another way employees are a security menace, Government Computer News, June 2011
Traditional IT Security Strategy: Multiple Security Perimeters

Network:
- Monitoring, intrusion detection, proactive and reactive response
- File and data encryption, enterprise rights management
- Secure coding, security specifications
- Antivirus software, patching, minimum security specifications for systems
- Firewalls, demilitarized zone, data loss prevention

Platform:
- Monitoring, intrusion detection, proactive and reactive response
- File and data encryption, enterprise rights management
- Secure coding, security specifications
- Antivirus software, patching, minimum security specifications for systems
- Firewalls, demilitarized zone, data loss prevention

Application:
- Monitoring, intrusion detection, proactive and reactive response
- File and data encryption, enterprise rights management
- Secure coding, security specifications
- Antivirus software, patching, minimum security specifications for systems
- Firewalls, demilitarized zone, data loss prevention

Response Capability:
- Monitoring, intrusion detection, proactive and reactive response
- File and data encryption, enterprise rights management
- Secure coding, security specifications
- Antivirus software, patching, minimum security specifications for systems
- Firewalls, demilitarized zone, data loss prevention

a.k.a. “Defense in Depth”
A closer look at Hacking: The *Motivations* Have Expanded....

**SLAMMER**  
Hacking for Fun

**ZEUS**  
Organized Crime

**AURORA**  
State-Sponsored Cyber Espionage

**STUXNET**  
Physical Harm

Hacking Software Tools for Sale:  
$11B/year industry with 56% CAGR
“The Malware Tsunami”

There were more malware attacks in 2010-2011 than in the previous 10 years combined!

- 60,000+ per day new unique malware pieces
- 6,000,000 per month new botnet infections
- 2,000,000 per month new malicious web sites
- **Stealth Attacks**
  Non-detectable malware and advanced persistent threats
Tools of the Modern Hacker

**Candy Drop:**
Placing infected USB drives where humans will take them, and later plug them into their PC or other network-connected device.

**Social Engineering:**
Manipulating people to divulge data or “click here”

**Advanced Persistent Threat (APT):**
A long term, human-directed “campaign” to take control of a specific system or network – all while remaining undetected.

**Kernel-mode Rootkit:**
It lives and operates below the operating system, to control the OS and evade detection by OS-level security measures. Can cloak other malware, APT’s.
Attacks Are Moving “Down the Stack”, to Gain Greater Stealth and System Control

Traditional attacks: Focused primarily on the application layer

OS infected with APTs: Threats are hidden from security products

New stealth attacks: Embed themselves below the OS and Virtual Machine, so they can evade current solutions

Attacks disable security products

Compromise virtual machine

Ultimate APTs: Compromise platform and devices below the OS, using rootkits as cloaks
A New Approach Is Required: “Hardware-enhanced Security”

- **Move critical security processes** *down into the hardware*
  - Encryption, Authentication, Manageability, and Platform Cleansing
  - Hardware is inherently less vulnerable to modification or corruption
- **Establish a security perimeter from the hardware layer up**
- **Isolate** the security services from the host OS (often the target)
- **Build in capability to** *monitor, maintain, repair, and recover*

**Added Protection against:**
- Viruses and worms
- Malware
- Disabled software
- **Rootkits**
Example of Hardware-enhanced Security: The DeepSAFE* Security Platform

DeepSAFE is the first hardware-assisted security platform from Intel and McAfee. Platform capabilities include:

• McAfee Deep Defender* product
  • Utilizes the isolation capabilities of Intel Virtualization Technology
  • Works “beyond” the OS, so it can’t be corrupted by OS or malware
  • Detects, blocks, and removes stealthy advanced persistent threats and malware
• Foundation for future solutions from McAfee and Intel

Next-generation “beyond the OS” security enabled by Intel® processor technology
Hardware-enhanced Security: Faster Encryption on PCs and Servers

Utah CTO Resigns After Massive Security Breach

“Utah Governor Gary R. Herbert says data on its servers will now be encrypted on its servers, and not just in transit” -- eSecurity Planet, June 4 2012

Intel® Core™ i5, Core™ i7, and select Intel® Xeon® processors, with Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)

Whole-disk Encryption  Internet Security  File Storage Encryption

Intel® AES-NI increases encryption operations up to 4x by using hardware and software together.²

² Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) requires a computer system with an Intel AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. See full disclaimer at http://www.intel.com/performance

* Other names and brands may be claimed as the property of others.
Intel® Active Management Technology (AMT) and Intel® vPro™ Technology

• Enables management of Networked PC’s by the IT Network Administrator
Remote recovery with Intel® AMT

Remote recovery with Intel® AMT

Businesses Face Many PC Service Interruptions Due to:
- Faulty Software Updates
- Operating System Failures
- Virus/Hacker Attack

Remotely diagnose, isolate, and repair an infected PC—even if it is unresponsive
Monitor and Manage Security on a Network: vPro + McAfee Deep Command

McAfee ePolicy Orchestrator Deep Command* direct utilizes Intel® vPro™ Technology (based on Intel® Active Management Technology) for local and remote management beyond the OS.
Example of Hardware-enhanced Security: Intel® Identity Protection Technology

Now built into your PC with Intel® IPT

Traditional hardware token

PC with Intel® IPT embedded tokens

1. Utilize PCs with Intel® IPT support

2. Choose a security software vendor
   Used for remote authorized users (VPN) and/or for the public web

End Users
Add security that is easy to use

Web Sites
Protect user accounts and limit losses

Organizations
Secure method for authorized users to remotely log in

1 Embedded tokens work with all Symantec VIP protected web sites as well as enabled VASCO protected sites.
Example of Hardware-enhanced Security: Intel® Anti-Theft Technology

Local intelligence on PC detects potential theft and triggers action, or PC is disabled using a poison pill sent over the Internet.

PC can be easily reactivated using a local password or server-generated code.

PC shows customized message and remains disabled even if the OS is re-installed or BIOS is re-flashed.

Intel® Anti-Theft Technology with enabled security service or software.

Hardware-based security helps protect the PC and data when it is lost or stolen.
Example of Hardware-enhanced Security for Virtualized Servers and Clouds

**Intel® AES-NI**
Built-in Encryption

**Intel® VT**
Protects VM Isolation

**Intel® TXT**
Works with the VMM to create “trusted” status

**Encrypt**
Intel® AES-NI delivers built-in encryption acceleration for better data protection

**Isolate**
Intel® VT and Intel® TXT protects VM isolation and provides a more secure platform

**Comply**
Intel® TXT establishes “trusted” status to enable migration based on security policy

Establishing the foundation for more secure data centers

Enhancing End to End Cloud Security

Build Foundation of Integrity: From Client to Network to Cloud

Public/Private Clouds (Servers, Network, Storage)

Private Cloud

Public Cloud

Secure Cloud Datacenters
Infrastructure & VM integrity, seamless federation, audit/compliance, data protection

Secure the Connections
Apps, data in flight, traffic

User & Intelligent Devices

Secure the Devices
Identity & access mgmt, platform integrity, data protection

Common Security Standards
Example of How Hardware-enhanced PC Security can enhance Cloud Security

- **Identity Federation**: Salesforce.com, Google.com

- **Strengthen and Simplify Authentication**

- **Protect against Man in the Middle Attacks**

- **Protect against Zero-Day Attacks**

**Authentication**

**Data Protection**

**Client Devices**: Smartphone, Laptop, Tablet, ATM

**Operating System**: McAfee

**CPU**: McAfee

**Intel**
Hardware-enhanced Security: Multiple Applications

Remote Client Management and Remediation, Client Anti-Theft and Recovery

Hardware-accelerated Whole-Disk Encryption

Hardware-accelerated Data Encryption

Embedded System, Virtualized Server, and Cloud Security

Identity Protection and Access Management

Intel and its partners are applying Hardware-enhanced Security to “harden” each perimeter of defense.
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Summary and Opportunity

The info security challenge is escalating.

**Hardware-assisted Security** is solving a variety of problems, many unsolvable by software-only.

We all have opportunity to *Change The Game:*

**Intel/McAfee + Partners + Customers**
Thank You!
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may not be available or certain capabilities may be limited over a host OS-based VPN or when connecting wirelessly, on battery power, sleeping,
hibernating or powered off. Setup requires configuration and may require scripting with the management console or further integration into existing
security frameworks, and modifications or implementation of new business processes. For more information, see

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configuration of your hardware, software and IT environment. To learn more visit: http://www.intel.com/technology/vpro

The original equipment manufacturer must provide TPM functionality, which requires a TPM-supported BIOS. TPM functionality must be initialized and
may not be available in all countries.
Intel® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct
sequence. AES-NI is available on select Intel® processors. For availability, consult your reseller or system manufacturer. For more information,

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