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

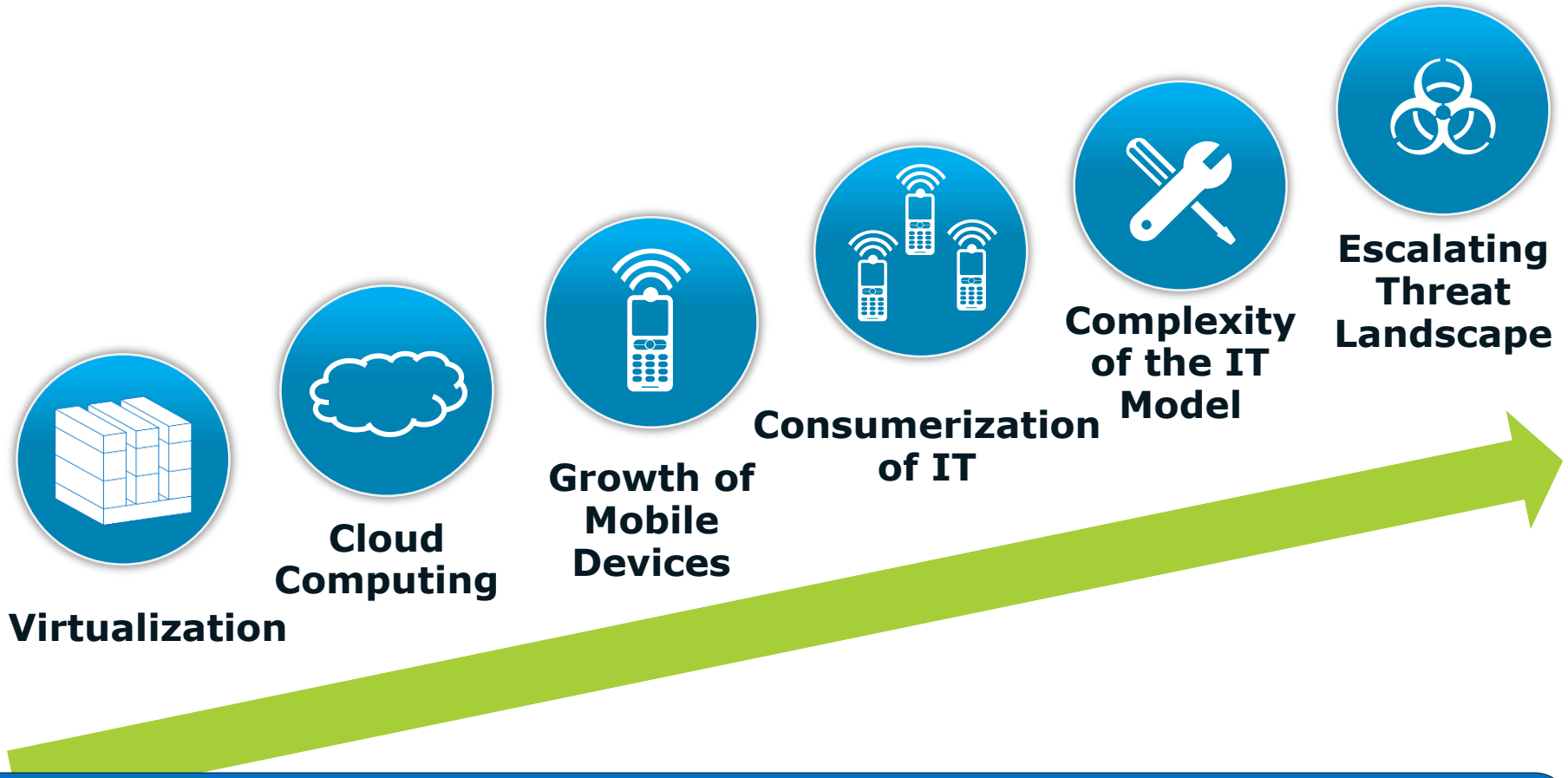
Secure Mobile Devices

Secure Embedded Devices

Cloud Security Platform

Hardware Enhanced Security

Computing Trends and Security Implications



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

Phishing Attacks and Spear Phishing

Corporate or Personal Stolen Credentials

Online Collaboration Tools

Social Networking Data

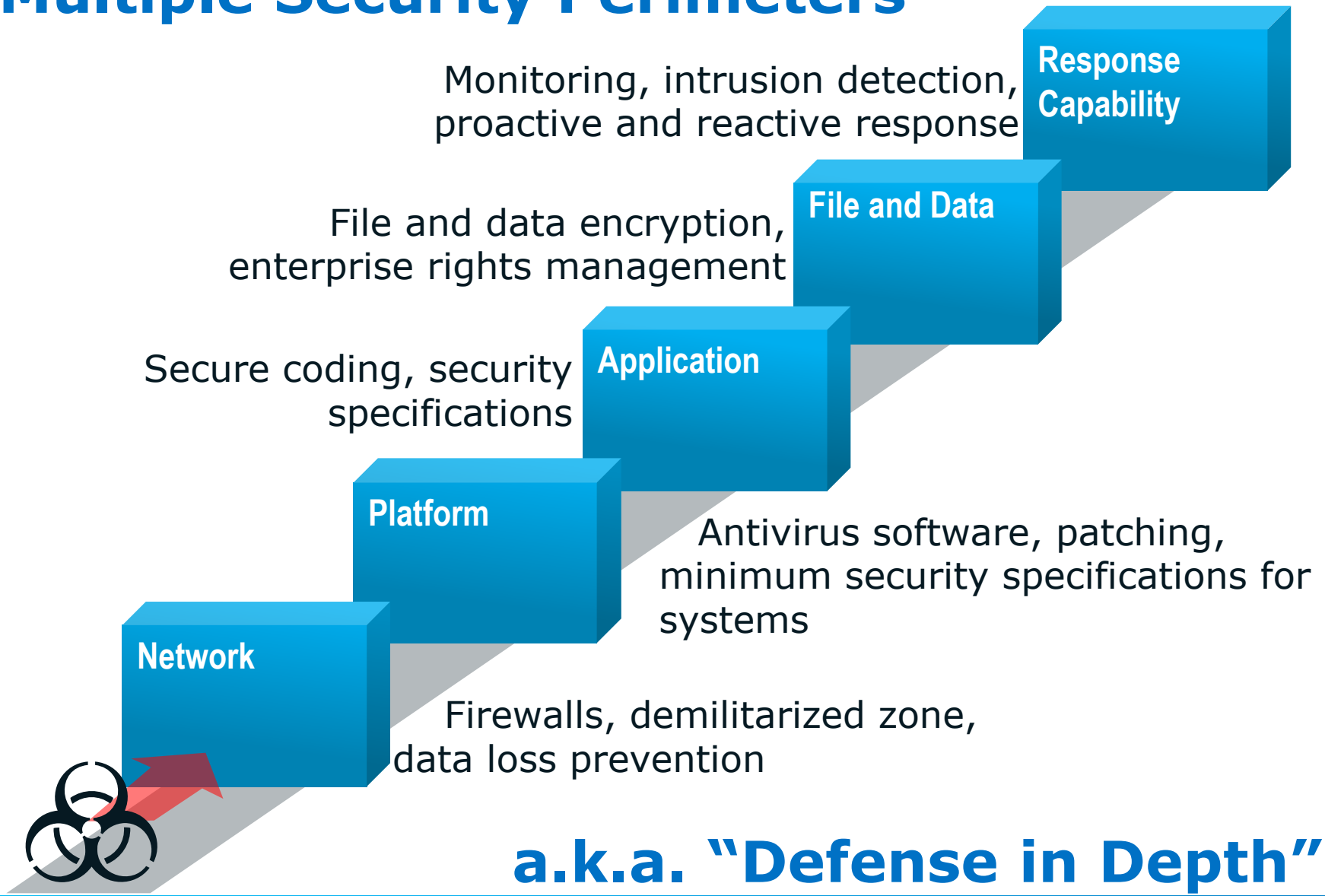
Humans make mistakes: Lost Devices, "Found" USB drives, etc.

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



a.k.a. "Defense in Depth"

A closer look at Hacking: The *Motivations* Have Expanded….

SLAMMER

ZEUS

AURORA

STUXNET

Hacking for Fun → **Organized Crime** → **State-Sponsored Cyber Espionage** → **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"

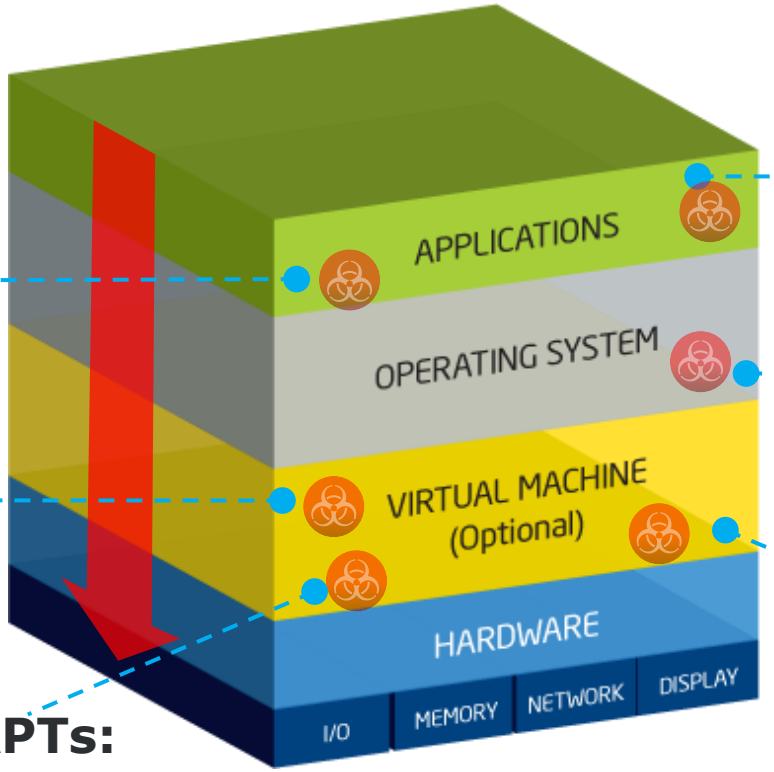
Advanced Persistent Threat (APT):
A long term, human-directed "campaign" to take control of a specific system or network – all while remaining undetected.

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

Attacks disable security products

Compromise virtual machine



Traditional attacks: Focused primarily on the application layer

OS infected with APTs: Threats are hidden from security products

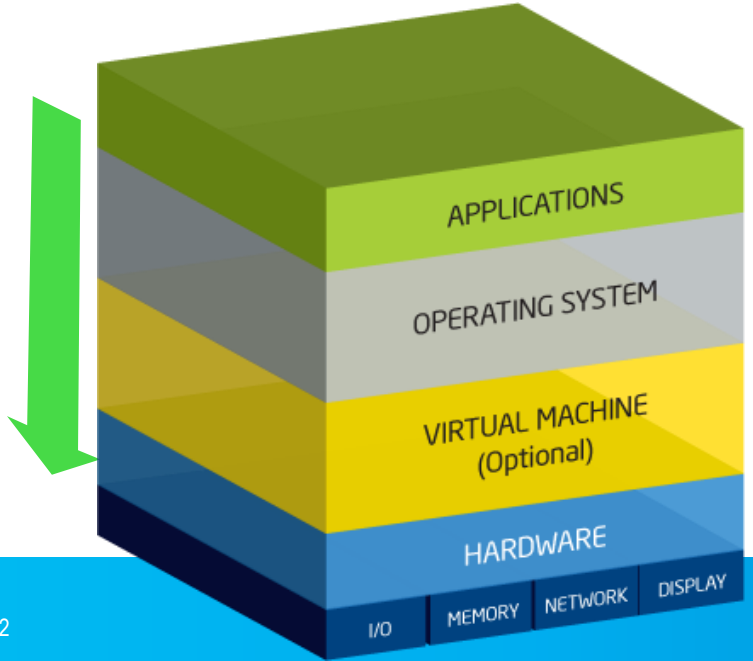
Ultimate APTs: Compromise platform and devices below the OS, using rootkits as cloaks

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

APT: Advanced Persistent Threat

A New Approach Is Required: "Hardware-enhanced Security"

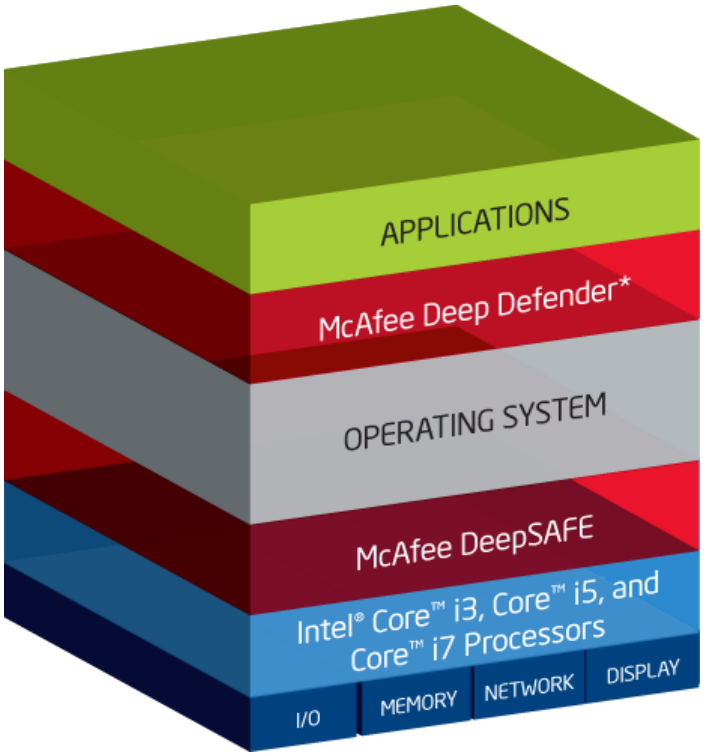
- **Move critical security processes *down into the hardware***
  - Encryption, Authentication, Manageability, and Platform Cleansing
  - Hardware is inherently less vulnerable to modification or corruption
- Establish **a security perimeter from the hardware layer up**
- **Isolate** the security services 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



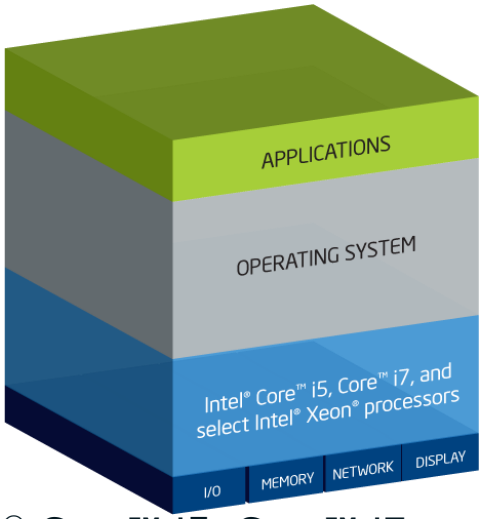
DeepSAFE is the first hardware-assisted security platform from Intel and McAfee. Platform capabilities include:

- 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

* Other names and brands may be claimed as the property of others.

Hardware-enhanced Security: Faster Encryption on PCs and Servers



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

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

Whole-disk Encryption

Internet Security

File Storage Encryption

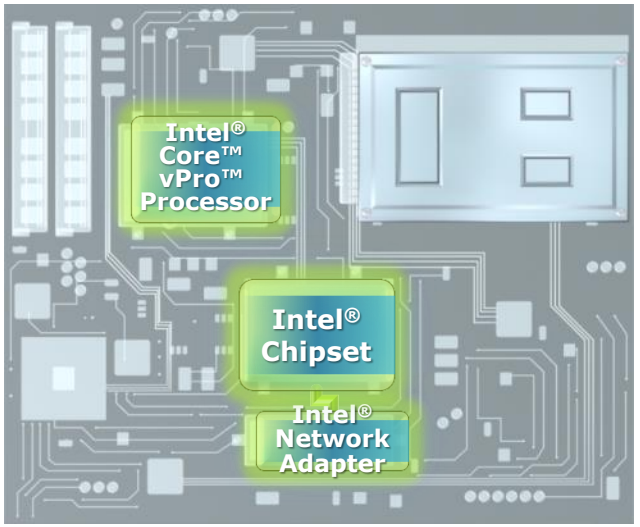
Intel® AES-NI increases encryption operations up to 4x by using hardware and software together.[2]

[1] The Clarkdale Review: Intel® Core™ i5 processor 661, Core™ i3 processor 540, and Core i3 processor 530, Anand Lal Shimpi, Anandtech, January 2010. http://www.anandtech.com/show/2901/5 .

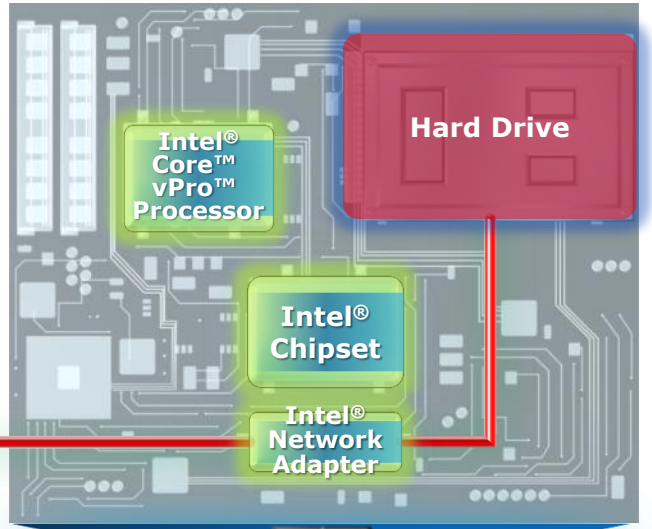
[2] Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI) requires a computer system with an Intel AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence.

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



Software Infected on Hard Drive

Businesses Face Many PC Service Interruptions Due to:

- Faulty Software Updates
- Operating System Failures
- Virus/Hacker Attack

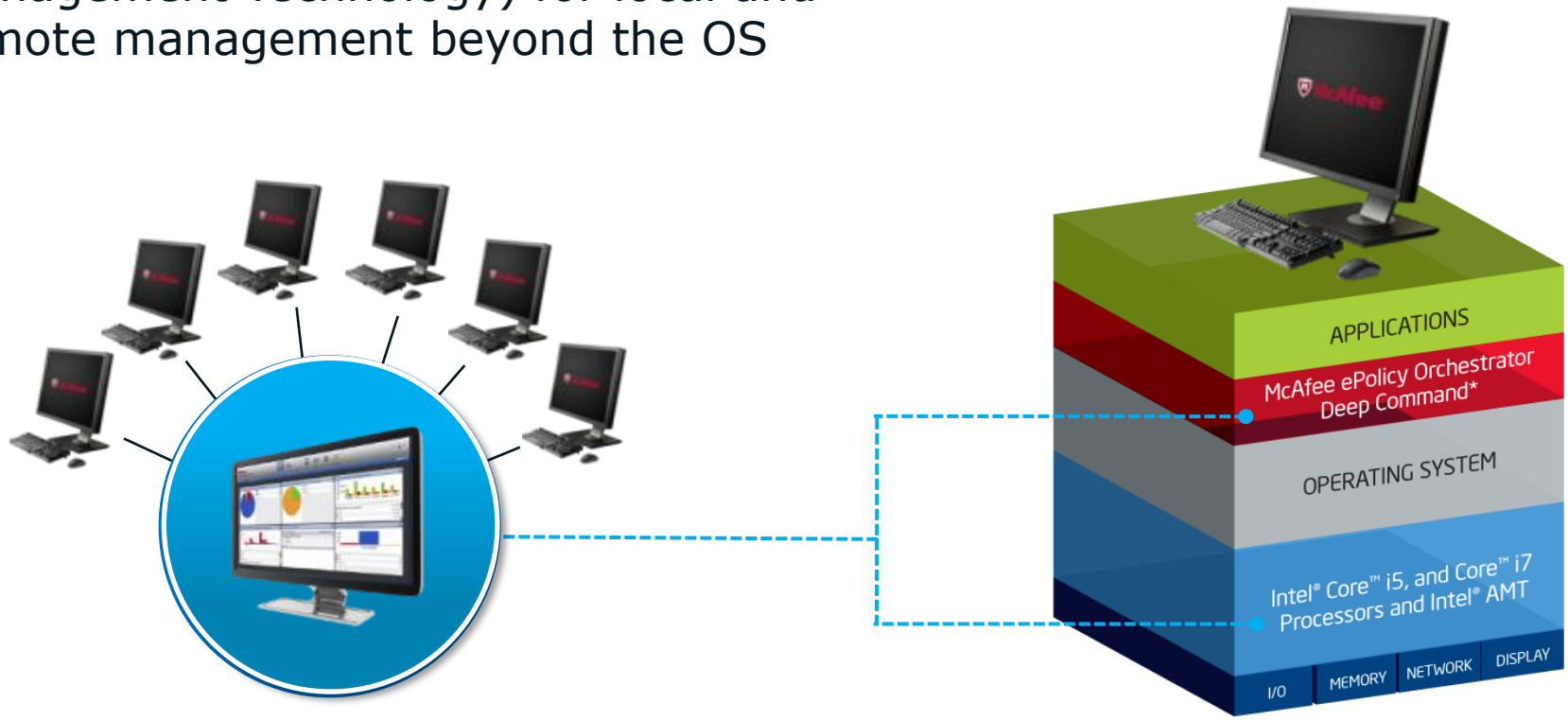
Business Employees

**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

Intel® Active Management Technology-enabled PC running McAfee Agent and Security Software



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[1]**

   Used for remote authorized users (VPN) and/or for the public web

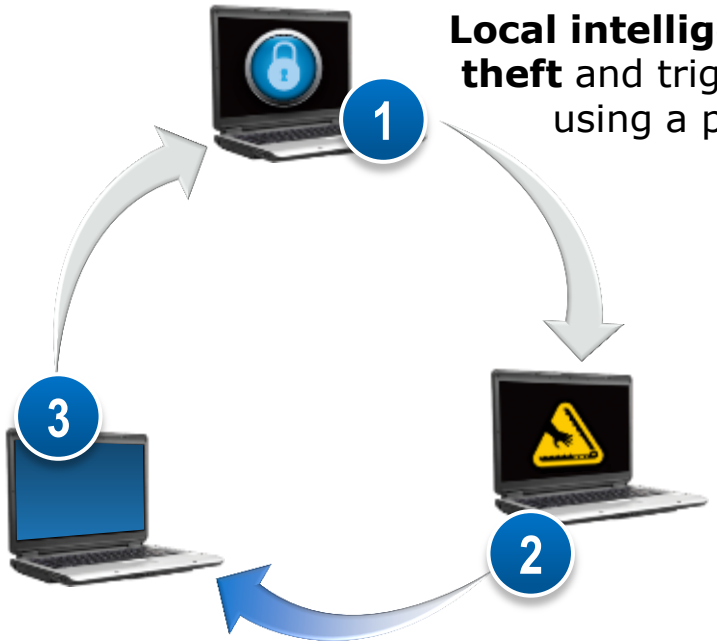
End Users
Add security that is easy to use

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

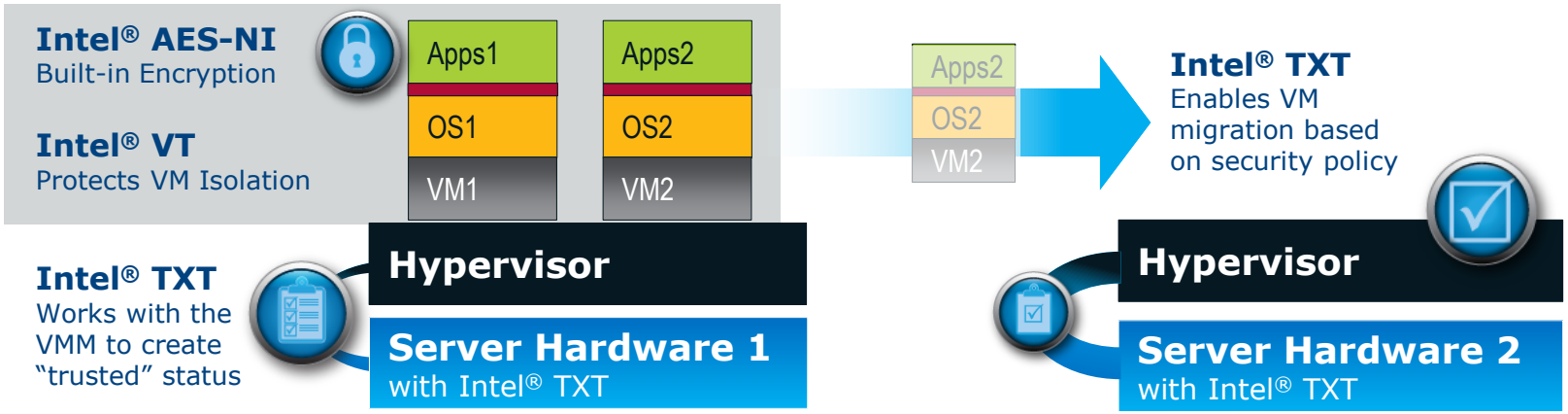
PC shows customized message and remains disabled even if the OS is re-installed or BIOS is re-flashed.

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

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

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



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

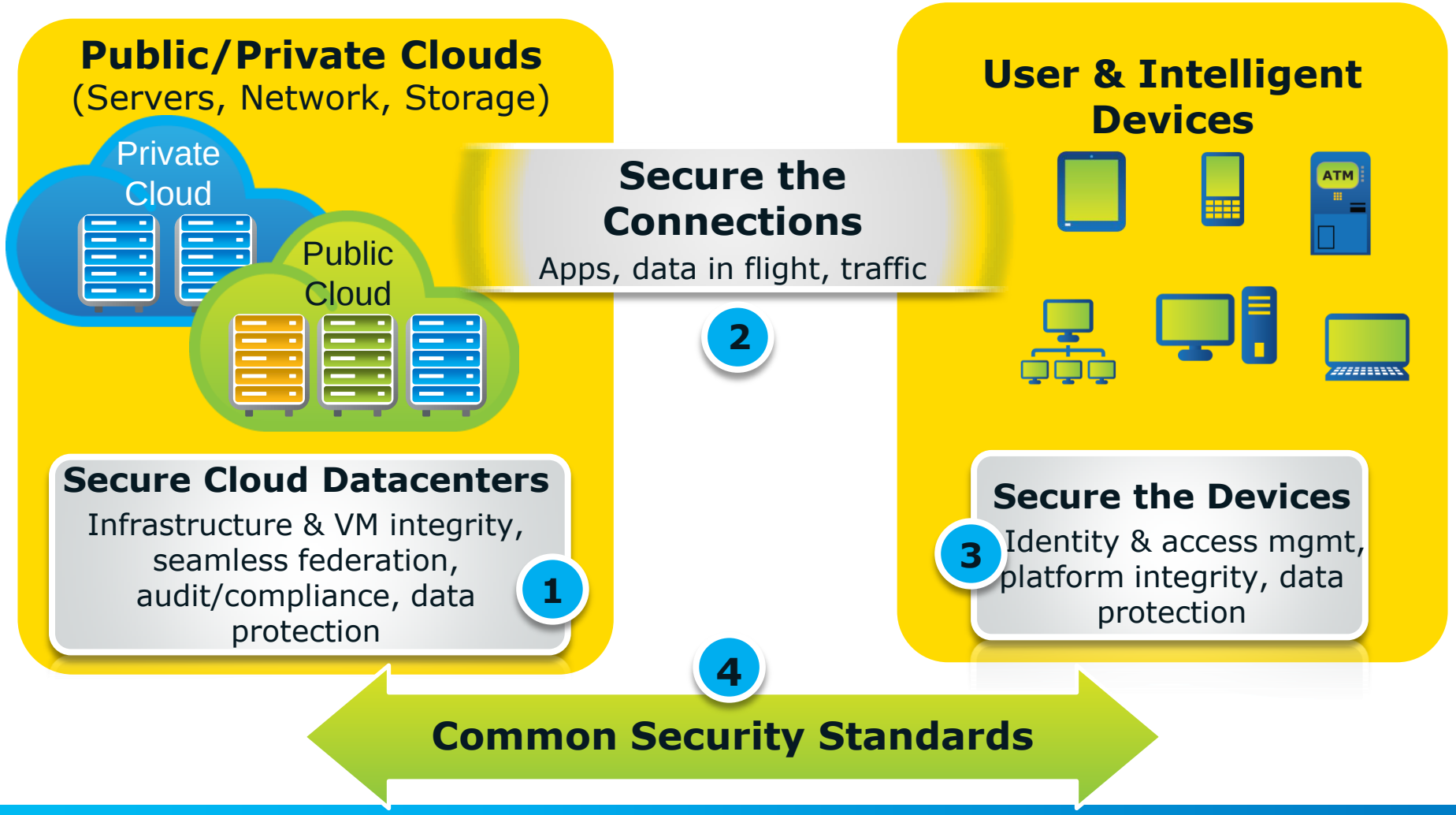
Intel® TXT
establishes "trusted" status to enable migration based on security policy

Establishing the foundation for more secure data centers

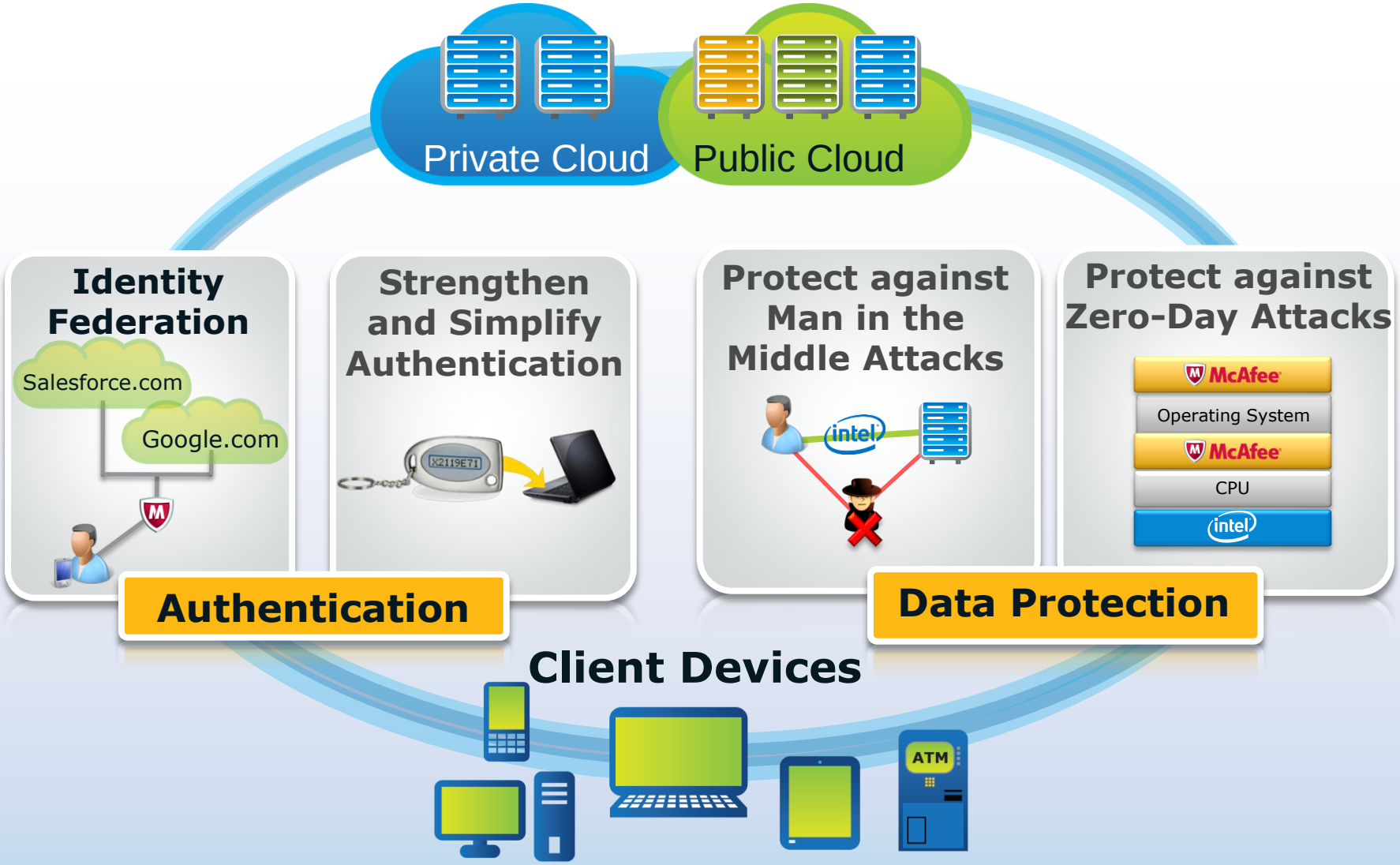
Intel® AES-NI – Intel® Advanced Encryption Standard New Instructions; **Intel® TXT** – Intel® Trusted Execution Technology; **Intel® VT** – Intel® Virtualization Technology

Enhancing End to End Cloud Security

Build Foundation of Integrity: From Client to Network to Cloud



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



Hardware-enhanced Security: Multiple Applications

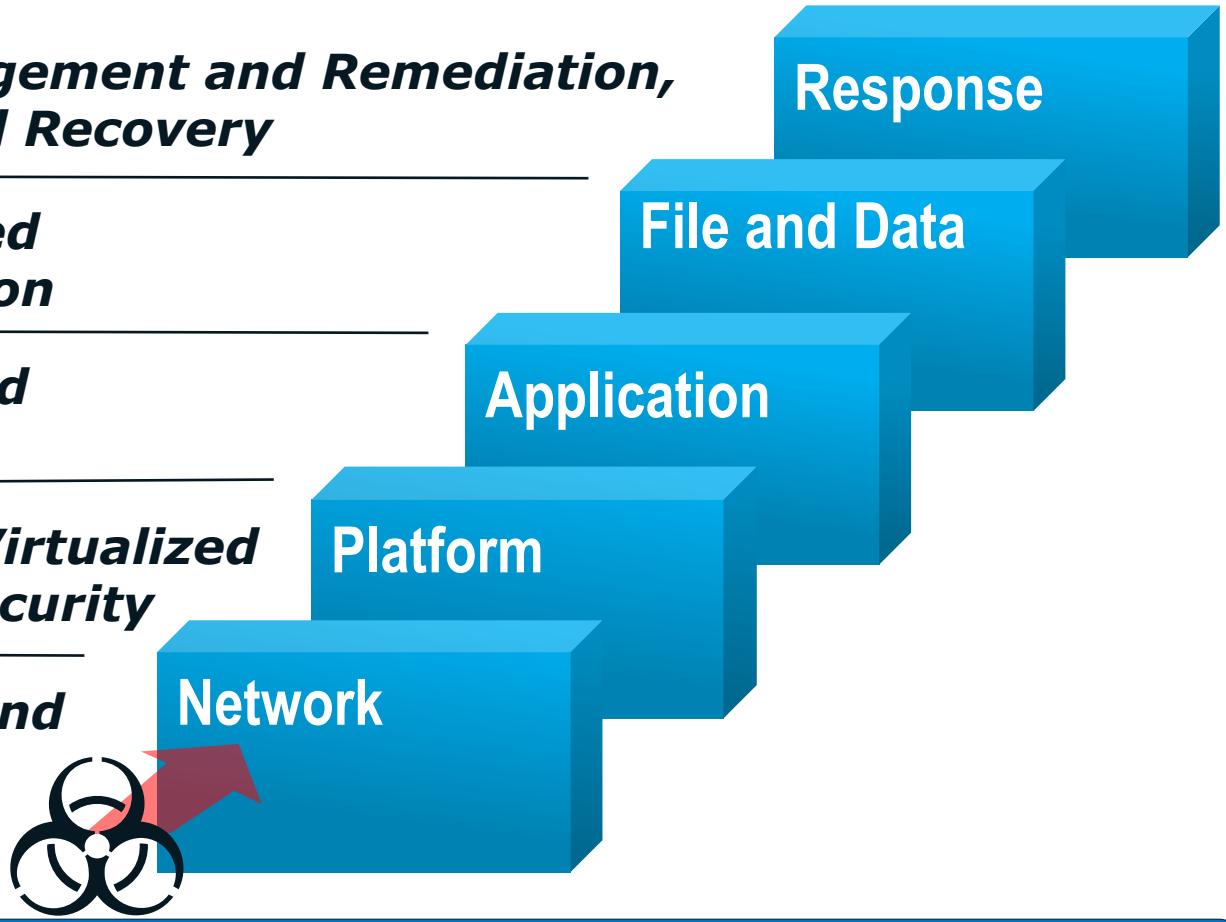
Remote Client Management and Remediation, Client Anti-Theft and Recovery

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.

Defense-in-Depth enhanced by Hardware-assisted Security

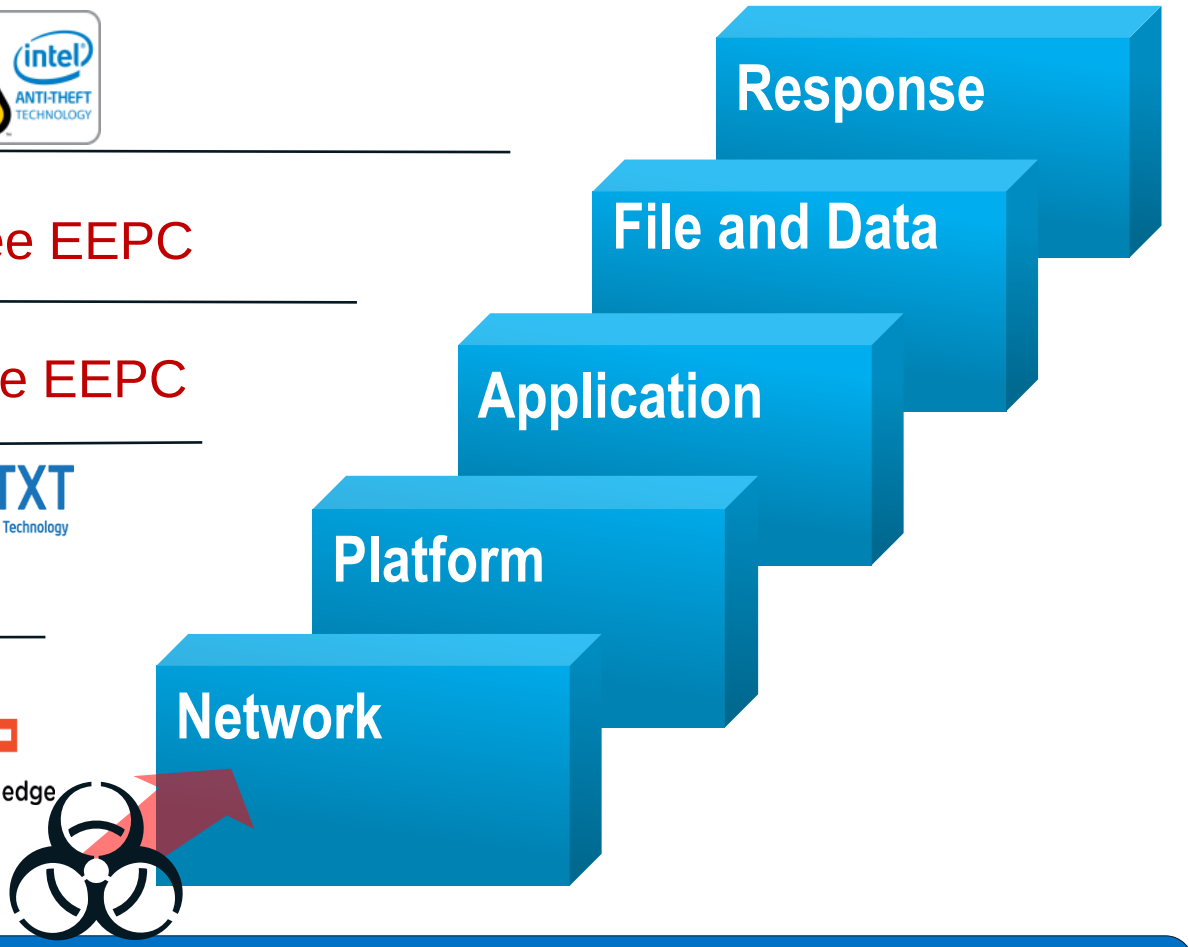
Intel® vPro™ Technology
McAfee DEEP COMMAND
intel ANTI-THEFT TECHNOLOGY

Intel® AES-NI
Intel® AES New Instructions
McAfee EEPC

Intel® AES-NI
Intel® AES New Instructions
McAfee EEPC

Intel® VT
Intel® vPro™ Technology
McAfee DEEP DEFENDER
Intel® TXT
Intel® Trusted Execution Technology
McAfee DEEP COMMAND

Intel® IPT
Intel® Protection Technology
Intel® Expressway Cloud Access 360
Intel® Expressway Service Gateway
nordic edge



Intel and its partners are applying Hardware-enhanced Security to "harden" each perimeter of defense.

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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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, see http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/

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