MAXIMIZING DATA'S POTENTIAL

2019 April 02 HPC User Forum Meeting

Cybersecurity and Risk Management and World-wide Standards

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Agenda

- Digital Disruption
  - Global Data Explosion
  - Market Transition to Security
- Product Cybersecurity Scope
- Security Certification and Standards
- Manage / Mitigate Risks
  - Compliance and Certification Management
  - Product Security Operations
- Summary

“To understand where we are going,
it’s important to understand how we got here.”

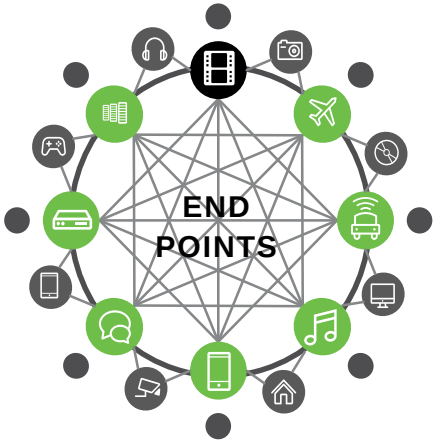
Digital Disruption

2.0 1980 - 2000
Client-Server
Distributed

1.0 1960 - 1970
Mainframe
Centralized

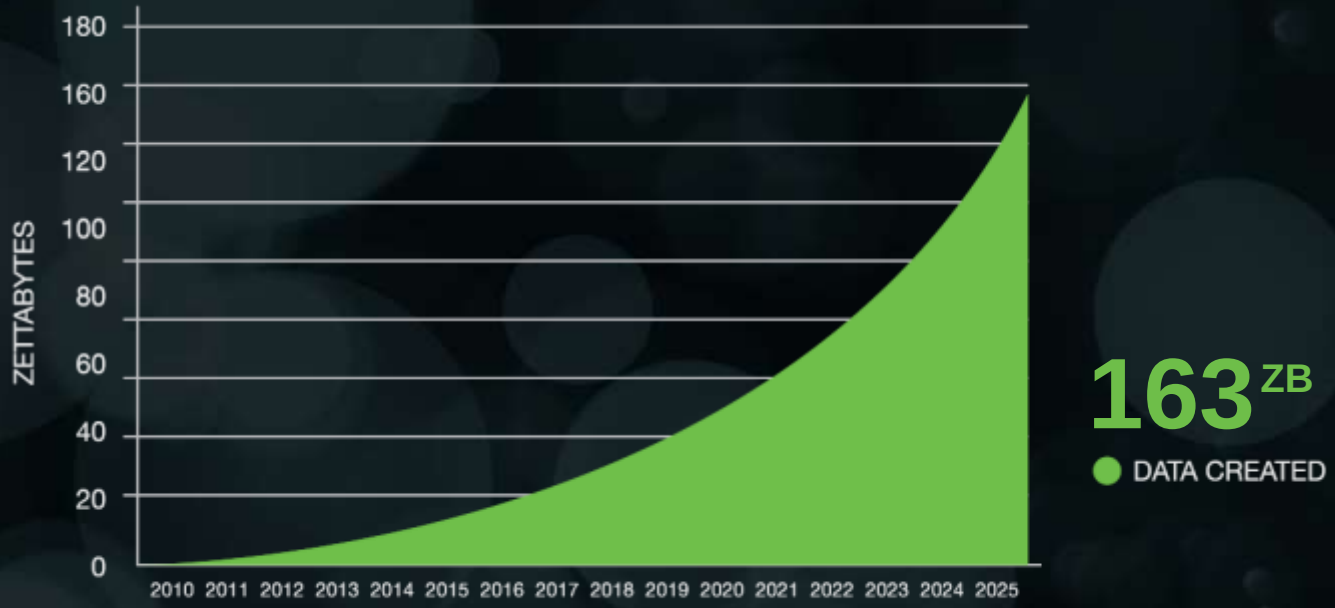
3.0 2005 - 2020
Mobile-Cloud
Centralized

4.0 2020 -
Rise of the Edge
Distributed



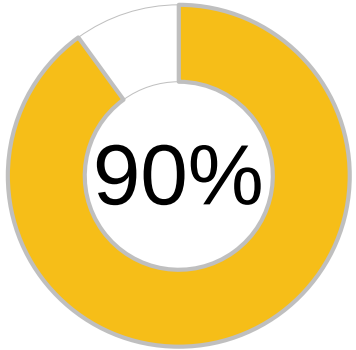
GLOBAL DATA EXPLOSION

The IDC Data Age 2025 report predicts massive volumes of data creation and a convergence of every industry utilizing the value of data.

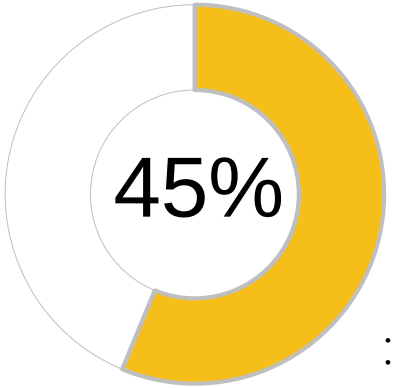


SOURCE: IDC's Data Age 2025 study, sponsored by Seagate, April 2017

Market Transition to Security is Occurring



Data created in 2025 that should be protected



Amount that will actually be protected

- https://www.pcmag.com/news/362543/how-much-does-a-data-breach-cost
- Average Cost of Data Breach in US from IBM and Ponemon study.

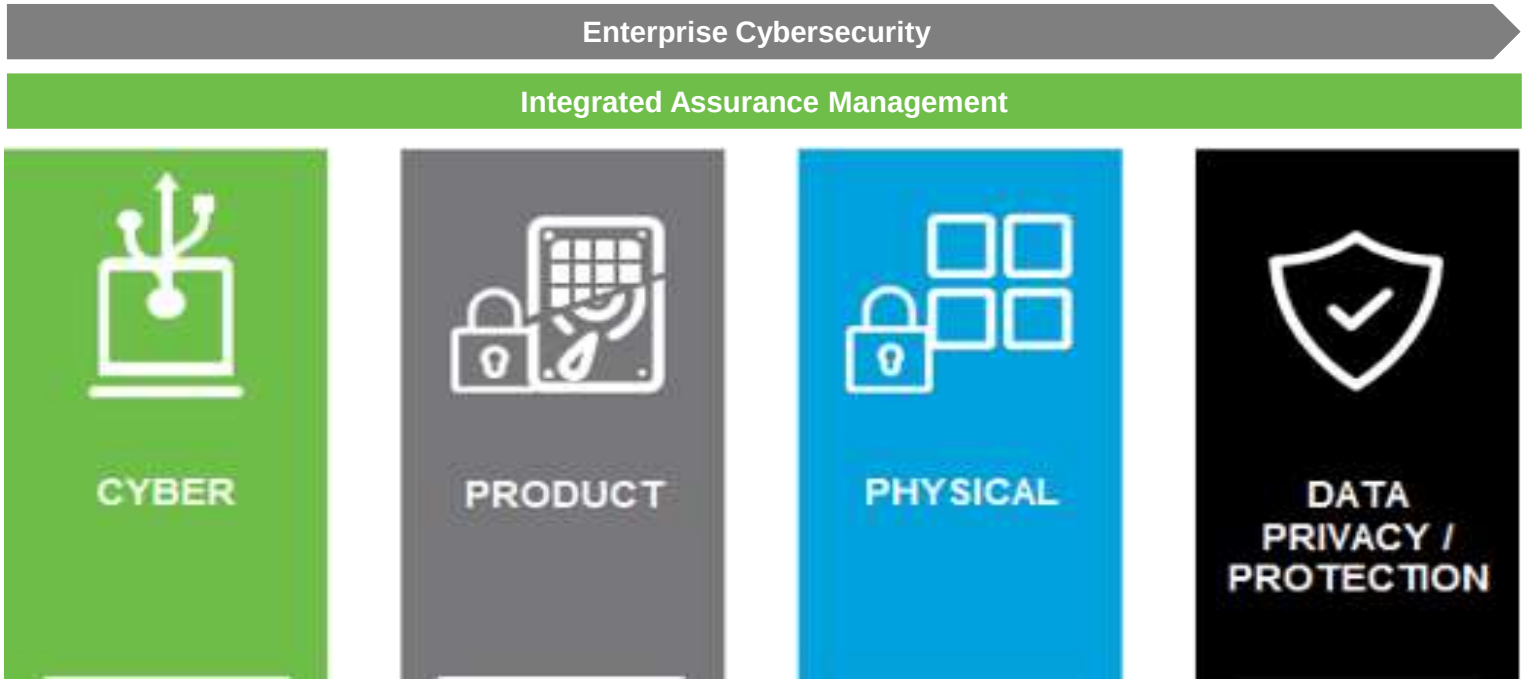
7.9M*

GDPR: 2-4% Annual Revenue

- Majority of data requires at least some form of protection
- Actual amount of data protection falls far short
- This gap presents an increasing industry need for security and privacy technologies, systems, and processes to address it
- Substantial penalties for non-compliance

Cybersecurity Scope

Lines of Protection

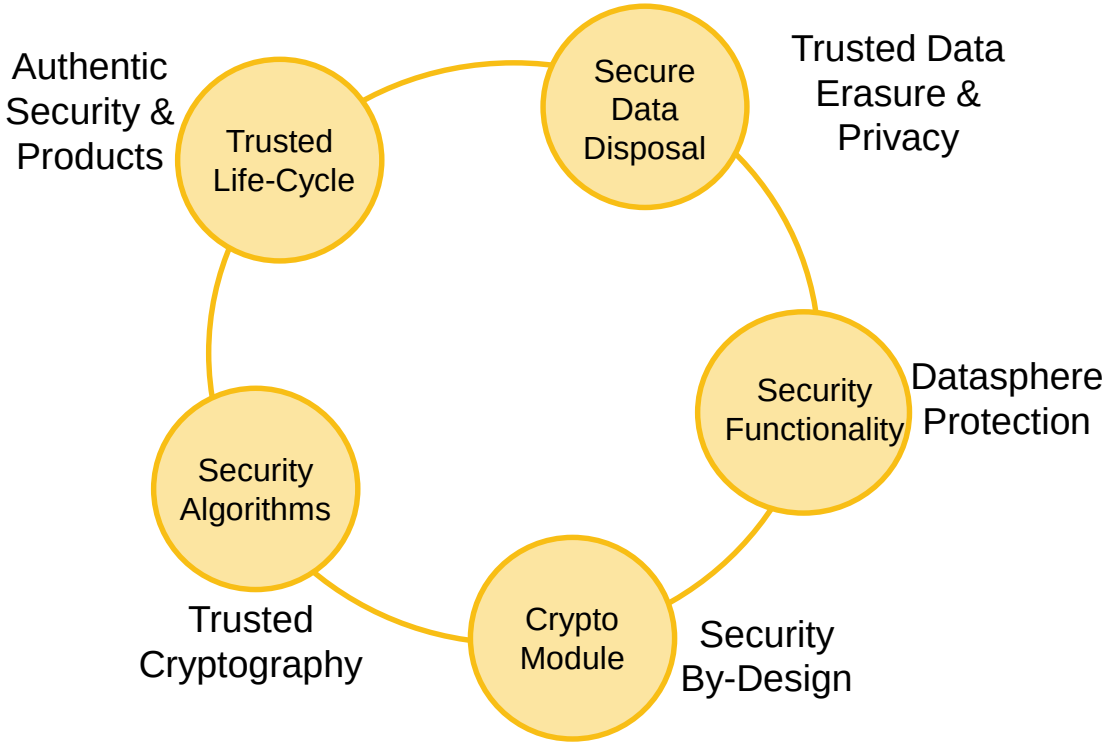


Cybersecurity Scope

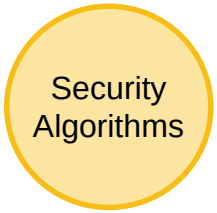
Enabling a Full Lifecycle Data Security Model

Manage Risk

Security Certification and Standards



Security Algorithm Certifications



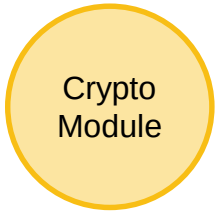
Trusted Cryptography

- Standard and Trusted Security Algorithms
- Certifications of all algorithms
  - Data Encryption
  - Integrity & Signatures
  - Random # Generation
  - Key Derivation…
- Required for FIPS 140-2 & Common Criteria Certs

NIST National Institute of Standards and Technology

Cryptographic Algorithm Validation Program (CAVP)

Security Module Certifications: FIPS 140-2



Security By-Design

- Fundamental Security Certification
- Evaluation by Independent Labs
- Required for Information Security Products in Sensitive and Unclassified space in US & Canada
- Value recognized in other geographies

NIST National Institute of Standards and Technology

Communications Security Establishment Canada

Cryptographic Module Validation Program (CMVP)

Security Module Certifications: Common Criteria (CC)

Security Functionality

Datasphere Protection

- Security Use-Case (Protection Profile) Certification
- Evaluation by Independent Labs
- Certification recognized by 28 member nations globally for Information Security acquisition

Common Criteria for Information Security Evaluation (CC)

Sanitization Standard

Secure Data Disposal

Trusted Data Disposal & Privacy

- NIST SP 800-88 (Federal) & ISO 27040 (International) define media sanitization
- NIST SP 800-57 Defines Crypto Algorithm Longevity for erasure assurance.

NIST Special Pub 800-88

NIST Special Pub 800-57

ISO 27040

Crypto Algorithm Longevity*

Security Strength		2011 through 2013	2014 through 2030	2031 and Beyond
80	Applying	Deprecated	Disallowed	
	Processing	Legacy use		
112	Applying	Acceptable	Acceptable	Disallowed
	Processing			Legacy use
128	Applying/Processing	Acceptable	Acceptable	Acceptable
192		Acceptable	Acceptable	Acceptable
256		Acceptable	Acceptable	Acceptable

AES in any key size (128, 192, 256) is acceptable for use to 2031 and Beyond.

Trusted Life-Cycle Standards

Trusted Life-Cycle

Authentic Security & Products

- The Open Trusted Technology Provider Standard (O-TTPS) is now a sanctioned ISO Standard
- Comprehensive Secure Technology Provider Standard
- Sections for Secure Technology Development and Secure Supply Chain
- The NIST Cybersecurity Framework Provides for common framework and language for managing Cyber Risk

THE Open GROUP

ISO 20243

Trusted Tech Provider Standard

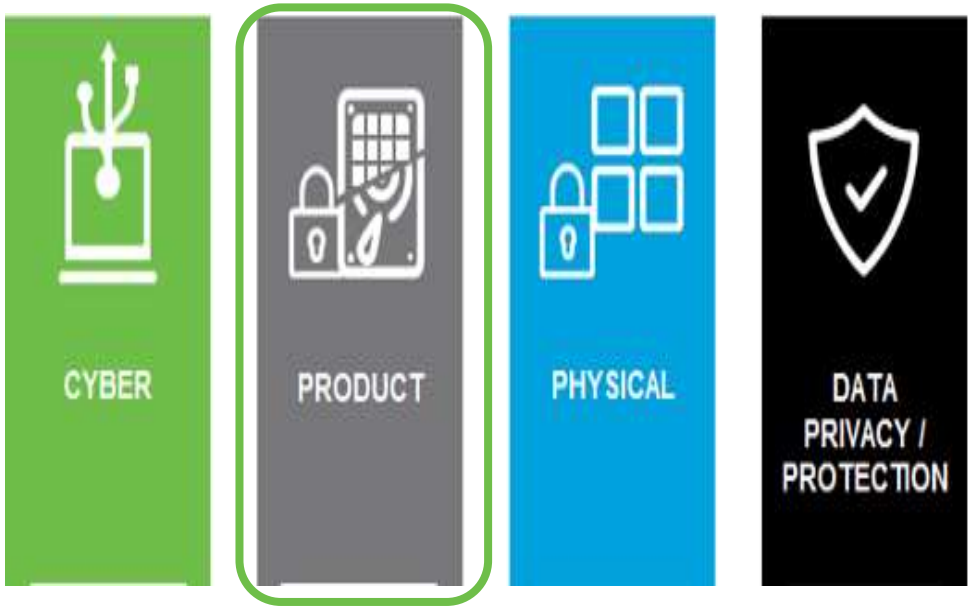
Category	Section	Subsection
Technology Development	Product Development / Engineering Method	Software / Firmware / Hardware Design Process
		Configuration Management
		Well-Defined Development / Engineering Method Process and Practices
		Quality and Test Management
		Product Sustainment Management
	Secure Development / Engineering Method	Threat Analysis and Mitigation
		Run-time Protection Techniques
		Vulnerability Analysis and Response
		Product Patching and Remediation
		Secure Engineering Practices
		Monitor and Assess the Impact of Changes in the Threat Landscape
Supply Chain	Supply Chain Security	Risk Management
		Physical Security
		Access Controls
		Employee and Supplier Security and Integrity
		Business Partner Security
		Supply Chain Security Training
		Information Systems Security
		Trusted Technology Components
		Secure Transmission and Handling
		Open Source Handling
		Counterfeit Mitigation
		Malware Detection

NIST National Institute of Standards and Technology

Cybersecurity Framework

Product Cybersecurity Scope
Mitigate Risk

Integrated Assurance Management



Policy-based compliance aligned to OTTPS, ISO and the NIST Cybersecurity Framework (CSF)

Identify → Protect → Detect → Respond → Recover

Policies

- Product Development Policy
- Product Development 3rd Parties

Maturity Staircase to Cybersecurity Compliance

- Gap Analysis
- Conformance
- Certification Preparation
- Certification

Transparent Compliance and Incident Response Management

- Product Security Operations Center (PSOC)
- Product Security Incident Response Team (PSIRT)

Scalable to Trusted Product Lifecycle

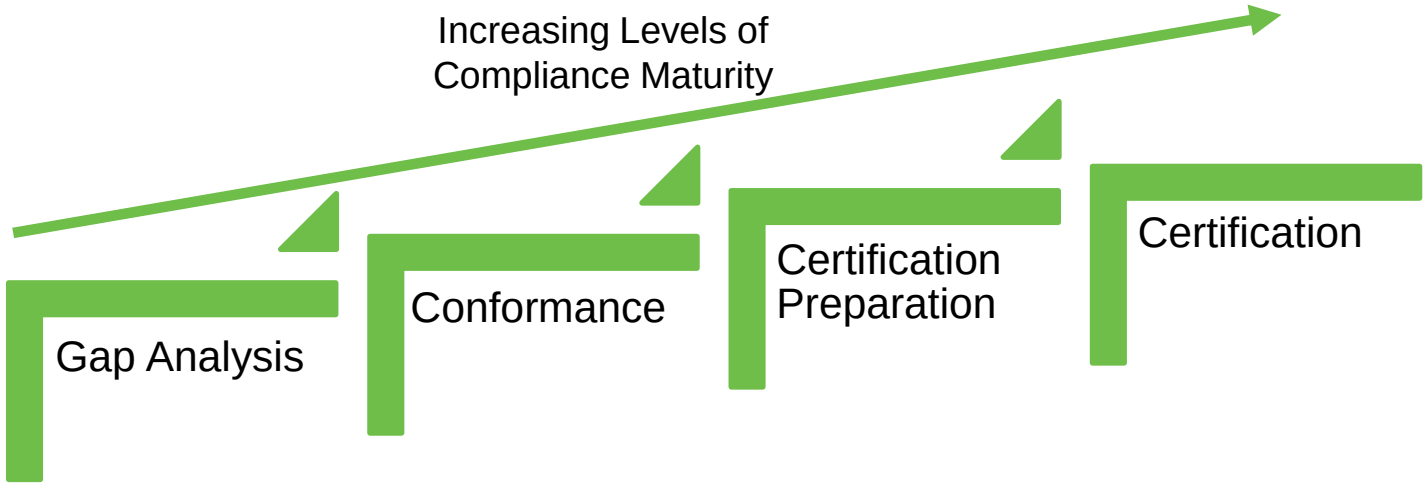
- Design, Source, Manufacture, Deliver, Service

Product Security: Manage Risk

Maturity Staircase Based Policy Compliance

Policies

- Product Development Policy
- Product Development 3rd Parties



Product Security: Certification

Trusted Product Life Cycle Certification

Certified Erase - Strong Data Protection Assurance

Trusted Tech Provider Standard

ISO 20243

- ✓ Essential & Certified By Design
- ✓ Trusted Design & Life-cycle
- ✓ Verifiable HW Roots of Trust

NIST Special Pub 800-88

NIST Special Pub 800-57

ISO 27040

- ✓ Defines Strong Media Sanitization
- ✓ Defines Security Requirements
- ✓ Defines Erase Certificate. App. D

Cryptographic Module Validation Program (CMVP)

Cryptographic Algorithm Validation Program (CAVP)

- ✓ Independent Lab Validation
- ✓ Validates 800-88 Security Rqmts
- ✓ Public Online Policy & Certificate

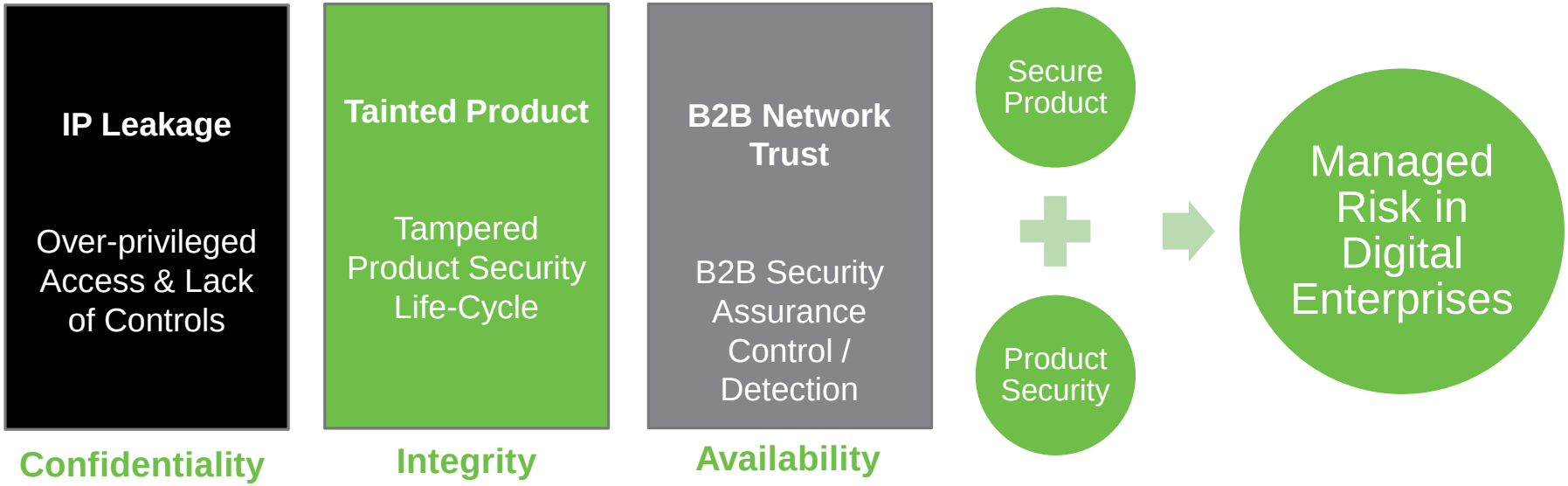
Common Criteria for Information Security Evaluation (CC)

EE – Encryption Engine Profile

AA – Authorization Acquisition Profile

- ✓ Independent Lab Validation
- ✓ Validates 800-88 Data Erasure
- ✓ Public Online Policy & Certificate

Summary


IP Leakage
Over-privileged Access & Lack of Controls
Confidentiality
Tainted Product
Tampered Product Security Life-Cycle
Integrity
B2B Network Trust
B2B Security Assurance Control / Detection
Availability
Secure Product
Product Security
Managed Risk in Digital Enterprises

Thank You