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HUMAN ELEMENT

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A Year In Review: Cybersecurity Trends & Activity In 2019

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About The Firm

Our Principals Are World-Class Cybersecurity Operators & Advisors.

Momentum CYBER

Dino Boukouris
Founding Director

Over A Century Of Experience In Cybersecurity As World-Class Advisors & Operators

250+ **$250B+**

Total M&A Transactions & Deal Value As A Team Since 1994

Cyber Exit Savvy – Deep Expertise Selling to Strategic & Financial Buyers

48 **$16B**

Cybersecurity Transactions & Total Deal Value Executed By Team Members Since 2002

$371M **$91M**

Average & Median Cybersecurity M&A Deal Value

Unparalleled Access Across the Cybersecurity Ecosystem with Executives, Board Members, Investors, & CISOs

1M+

Categorized Data Points On >3,500 Cybersecurity Companies (CYBERcloud)

CYBERcloud

Unrivaled Thought Leadership In Cybersecurity Through Insightful Research

Cyberstorm 2.0 | Key Factors In Today's Threat Landscape…

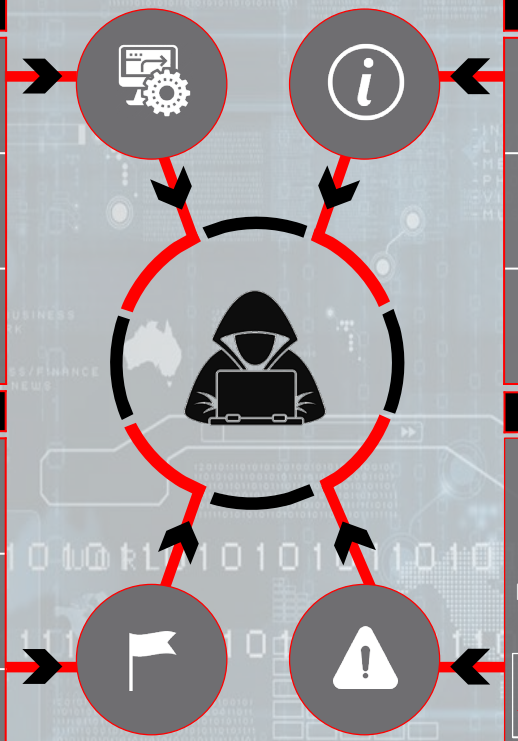
Various Industry-Wide Developments Are Making It More Difficult To Define & Protect Against The Challenging Threat Landscape.

Automation & AI-Powered Attacks

- Automation is **a double-edged sword**, it makes defenses better, but attackers employ it to **execute wider attack campaigns**
- **Hacking algorithms** will only continue to get better, as AI can be trained to ultimately **seek** & **exploit vulnerabilities in any network**
- Driving **hyperscale volume & complexity of threats**

Nation States Involvement

- There are "**no rules**" & **nothing is off limits for** nation states; they are not afraid to use **guerilla tactics** & attack where enterprises least expect it
- Demonstrated ability and willingness to **target elections & other critical infrastructure** that have **profound effects on society**
- Foreign actors have **increasingly strong AI capabilities,** making it more **difficult to track and respond** to nation state attacks



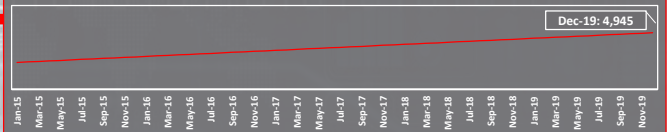
Information Manipulation

- **Fake news, deep fakes**, etc. use **new tactics** that traditional **Cyber defenses cannot prevent** to accomplish **similar end-goals** of Cyber attacks
- Since information manipulation is a relatively new threat category, it **does not fit into Cybersecurity's traditional taxonomy**
- Not as frequently discussed as other Cyber threats because there is **little currently known on how to defend against it**

Growing Sentiment That Things Are Getting Worse

Data suggests that the **overall perception from experts** is that broad **security posture** is **continuously deteriorating**

NYU Index of Cyber Security (ICS): Sentiment-Based Metric Of Perceived Risk (**Up 100%+ Since 2015**)



Source: The Index of Cybersecurity; The Future of AI & Cybersecurity; Nation State Attacks & Ransomware In 2020

…Leading Enterprises To Modernize Their Cybersecurity Posture

Organizations Must Continue To Evolve Their Defense Systems To Be More Adaptable & Nimbler To Handle Modern / Next-Gen Threats.

Automation & AI-Powered Defenses

- Automated security tools creating a **fairer fight** against highly automated offensive attacks
- Enables **dynamic policy updates** across security products to defend against continuously changing attacks
- **Predictive protection** against current and **future attack behavior** instead of static prevention and reactive response

Virtualization

- Advanced security functions that have traditionally only been available in hardware can be **consumed virtually**
- Resulting in **lighter-weight, more nimble, flexible defenses** with the same advanced security capabilities
- The **future of security** is moving towards a closer union between networking & security to **improve prevention & secure internet traffic**

Software-Defined Infrastructure To Defend Dynamically

- A **software-centric view** of infrastructure enables organizations to more **dynamically adapt & adjust** their defenses to constantly changing threats
- Artificial intelligence be leveraged to **automatically insert, change, & remove security points** in **real-time**
- Security defenses are moving towards more "**point-and-click**" deployment capabilities for more rapid protection

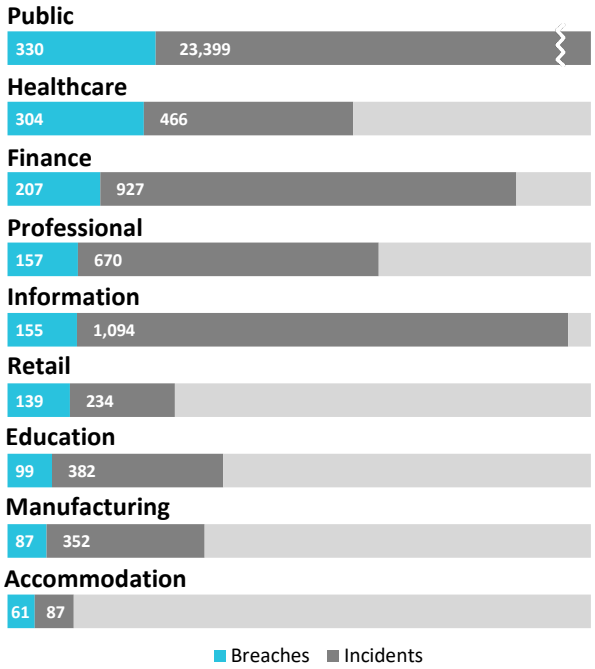
Micro Segmentation / Decentralized Networks

- To improve security posture, organizations can either **build better defenses**, have a **scattered network**, or not **have a network at all**
- Micro segmentation can **limit threats from spreading virally** if they are able to penetrate a network
- **Isolation of communication flows** enables a more granular workload security control

Verizon 2019 Global Data Breach Investigations Report

Data Breaches Are Prevalent Across Industries & Driven Primarily By Outsider Threats & Hacking Techniques.

Number Of Breaches & Incidents By Sector



Who's Behind The Breaches?

69% Perpetrated by Outsiders

34% Involved Internal Actors

2% Involved Partners

5% Featured Multiple Parties

39% Perpetrated by Organized Crime

23% Nation-State or Affiliated Actors

Tactics Utilized

52% Featured Hacking

33% Included Social Attacks

28% Involved Malware

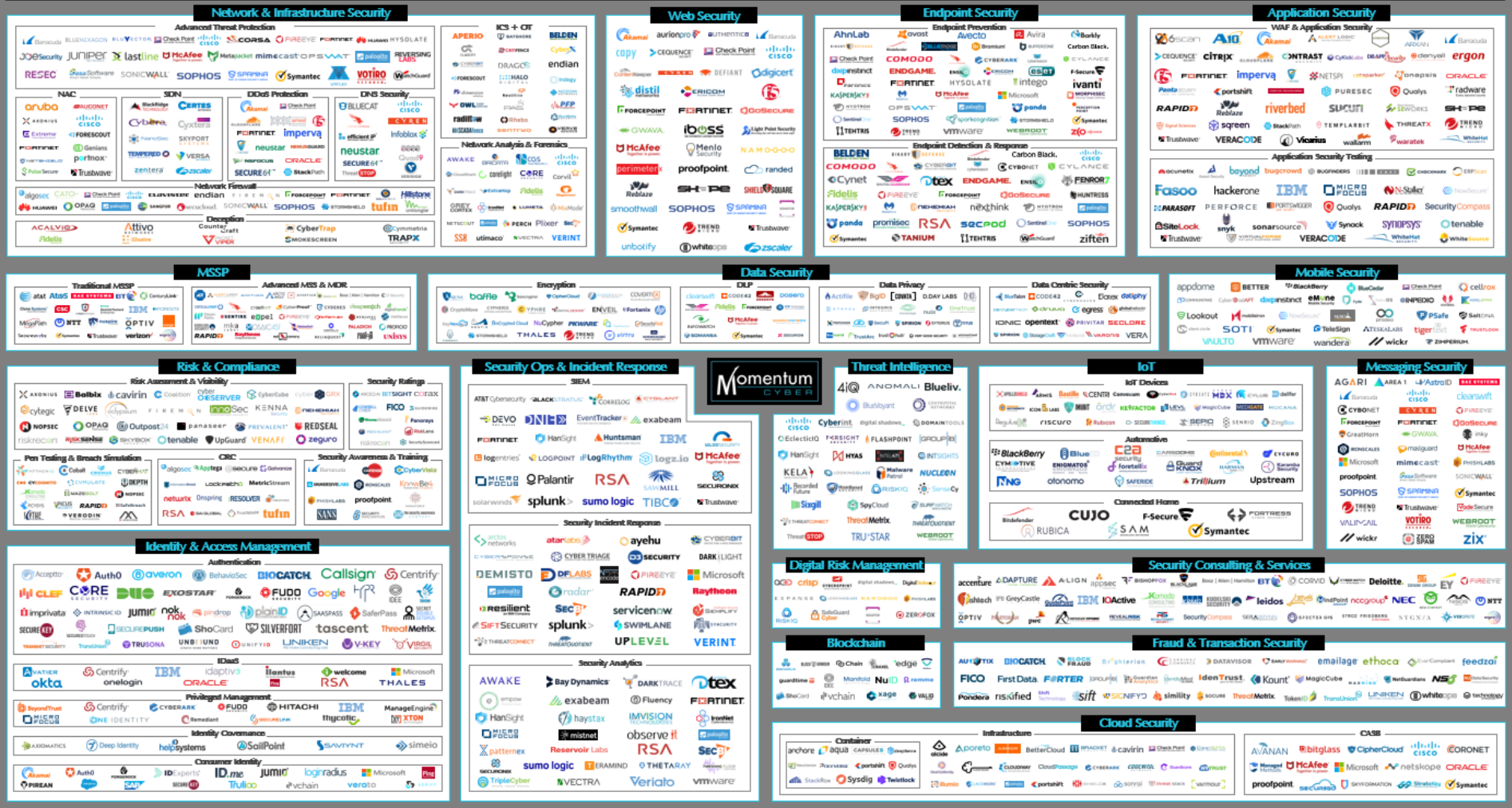
21% Were Caused by Errors

15% Were Misuse by Authorized Users

4% Involved Physical Actions

Source: Verizon: 2019 Data Breach Investigations Report.

CYBER SCAPE 2020



Momentum Cyber's Snapshot of 2019

2019 Was Another Transformational Year For The Cybersecurity Industry.

Momentum CYBER

$95M Median 2019 M&A Deal Value

5 Billion-Dollar-Plus Deals

Broadcom Acquires Symantec (Enterprise Assets)	Thomabravo Acquires Sophos	VMware Acquires Carbon Black.	Opentext Acquires Carbonite	F5 Acquires Shape
$10.7B	$3.9B	$2.1B	$1.4B	$1.0B

Increasing Demand For Comprehensive Risk Management

Third-Party	Cyber Insurance Focused
BitSight, cyberGRX, SecurityScorecard, riskrecon	Coalition, corax, CyberCube
Vulnerability-Based	**Financially-Oriented Quantification**
Kenna Security, RiskSense	axio, Guidewire, RiskLens

A Record Year For Cybersecurity

$27.6B Total M&A Volume *(all-time high)*

$8.9B Total VC Investments *(all-time high)*

51 Completed Deals

Private Equity ♥'s Cybersecurity

abry partners, BGH, FP Francisco Partners, Norwest Venture Partners, Insight Partners, STG, Vista Equity Partners, Sunstone Partners, Thomabravo

Largest Cybersecurity M&A Deal Of All-Time

$10.7B

Symantec (Enterprise Assets)

21 Capital Raises ≥ **$100M**

KnowBe4	cybereason	OneTrust	1Password	druva
$309M	$200M	$200M	$200M	$130M
SentinelOne	sumo logic	DASHLANE	Auth0	onelogin
$120M	$110M	$110M	$103M	$100M

2019 Stock Price Performance Of Public Companies Continues Positive Momentum

okta	RAPID7	Ping Identity	avast	CYBERARK
81% ↑	80% ↑	62% ↑	59% ↑	57% ↑

4 Cybersecurity IPOs In 2019

Ping Identity	CROWDSTRIKE	tufin	CLOUDFLARE
62% ↑	47% ↑	26% ↑	14% ↑

paloalto NETWORKS

Dominating Cyber M&A

5 Acquisitions Totaling **>$1.2B**

- DEMISTO — $560M — SOAR
- PURESEC — $47M — Serverless App Security
- Twistlock — $410M — Container
- ZingBox — $75M — IoT Security
- Aporeto — $150M — Zero-Trust Cloud Security

Risk & Compliance Was The Most Active Financing Sector For 2nd Year In A Row

64 Capital Raises

Coalition, cyberGRX, Kenna Security, KnowBe4, Immersive Labs, Panorays, QOMPLX:, RiskLens, SecurityScorecard

Security Services Lead M&A Activity

62 M&A Transactions across MSSP & Consulting

CoalFire, Rook Security, SecureLink, Sword & Shield, TerraVerde, trustshield, SecureData

IAM Continues To Attract Investors

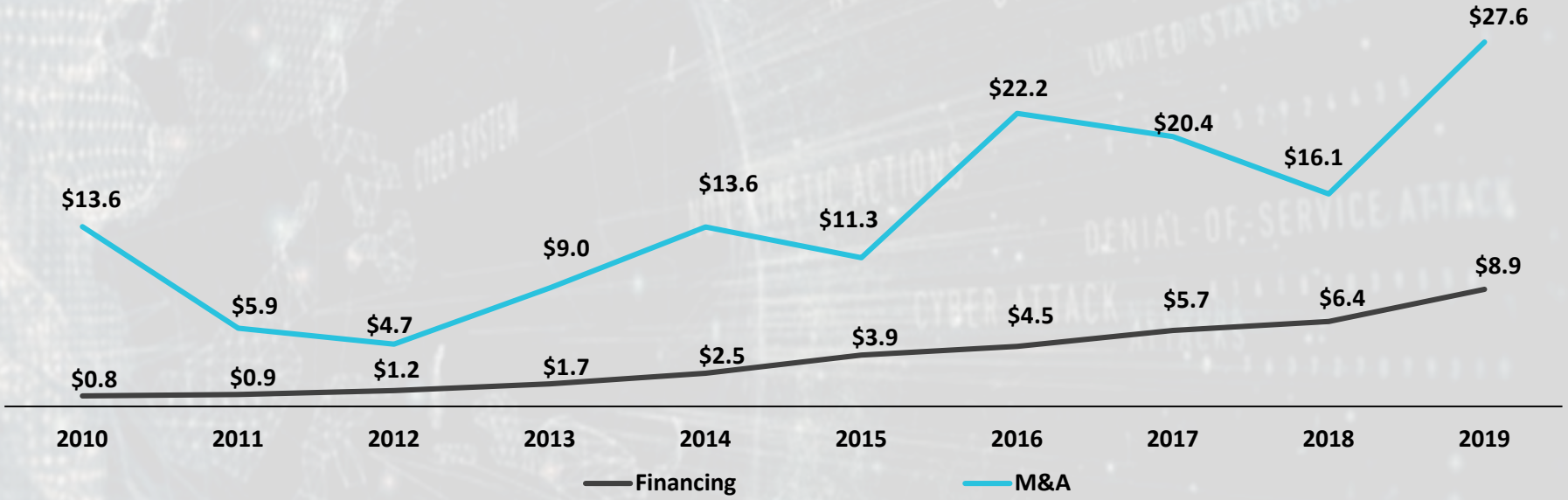
$1.1B Total Raised

1Password, Auth0, DASHLANE, evident, JumpCloud, onfido, onelogin, Remediant, Trulioo

The Last Decade Of Cybersecurity Strategic Activity

$180B+ Deployed Across Cybersecurity M&A & Financing Over The Past Decade.

2010-2014 Strategic Volume ($B)				2015-2019 Strategic Volume ($B)			
M&A	$46.8B	Financing	$7.1B	M&A	$97.5B (108% ↑)	Financing	$29.5B (314% ↑)

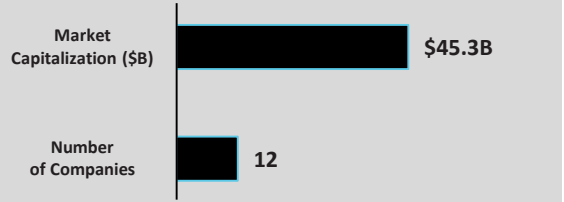


Significant Growth in Public Cyber Companies | 2010 – 2020

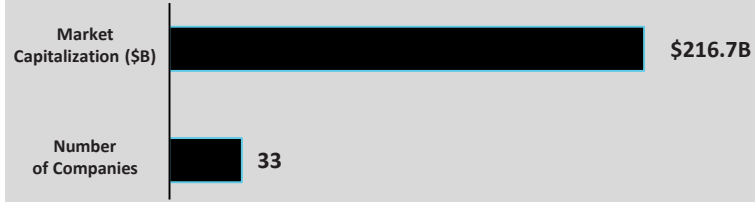
Aggregate Market Capitalization For Cybersecurity Has Grown Considerably Over The Last Decade.

Explosive Growth In Public Cybersecurity Companies

Public Company Stats | 2010



Public Company Stats | 2019



379% ↑
Growth in Market Capitalization

175% ↑
Growth in Number of Public Cybersecurity Companies

Public Cyber Companies | 2010

AhnLab, Check Point Software Technologies Ltd., Fortinet, F-Secure, gemalto (security to be free), KeyW (A Wholly Owned Subsidiary of Jacobs), McAfee (Together is power.), nccgroup, OneSpan, Symantec, Trend Micro, VeriSign

Public Cyber Companies | 2019

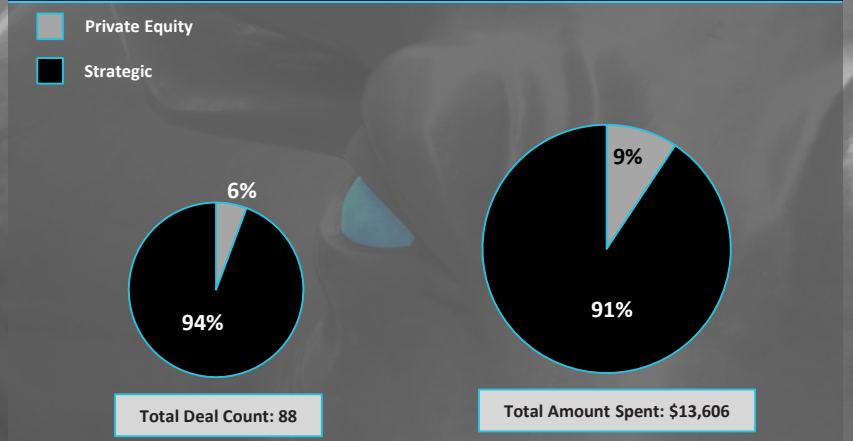
AhnLab, avast, BlackBerry, 蓝盾 BLUEDON, Check Point Software Technologies Ltd., Cloudflare, CrowdStrike, CyberArk, F-Secure, FireEye, Forescout, Fortinet, mimecast, mobileiron, nccgroup, Norton LifeLock, okta, OneSpan, paloalto networks, Ping Identity, proofpoint., Qualys., RAPID7, SailPoint, Secureworks, solarwinds, splunk>, tenable, Trend Micro, tufin, VARONIS, VeriSign, zscaler

Source: Capital IQ.
Note: Only includes companies with a market capitalization of greater that $150M.

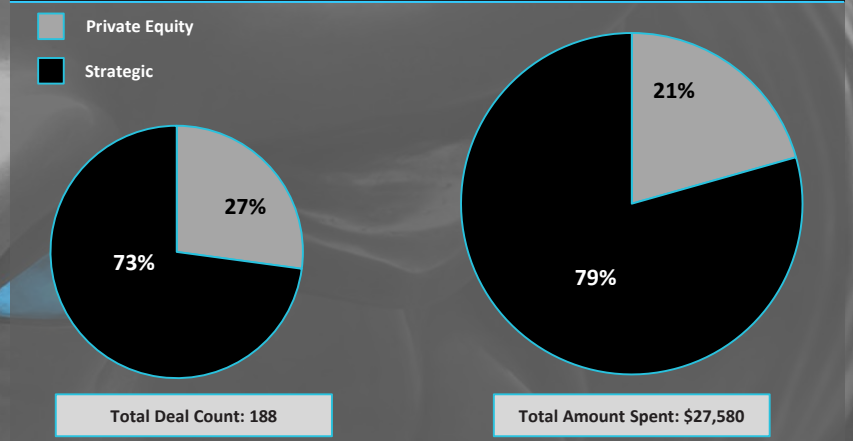
Private Equity Accounts For Significant Portion of Cybersecurity M&A

Private Equity Activity Has Increased Significantly in Cybersecurity.

M&A Activity By Type of Buyer | 2010



M&A Activity By Type of Buyer | 2019



Cyber Private Equity Universe

Apax Partners
General Atlantic
One Equity Partners
Ontario Teachers' Pension Plan
Thoma Bravo

Cyber Private Equity Universe

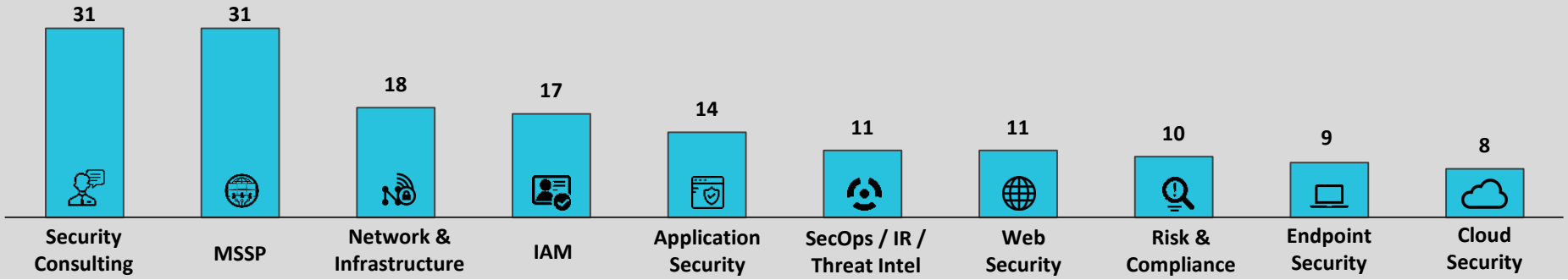
Apax Partners
Battery
BC Partners
FP Francisco Partners
HGGC
Insight Partners
STG
Sunstone Partners
TA Associates
TPG
Thomabravo
Vista Equity Partners

Source: Momentum Cyber Proprietary M&A & Financing Transaction Database.

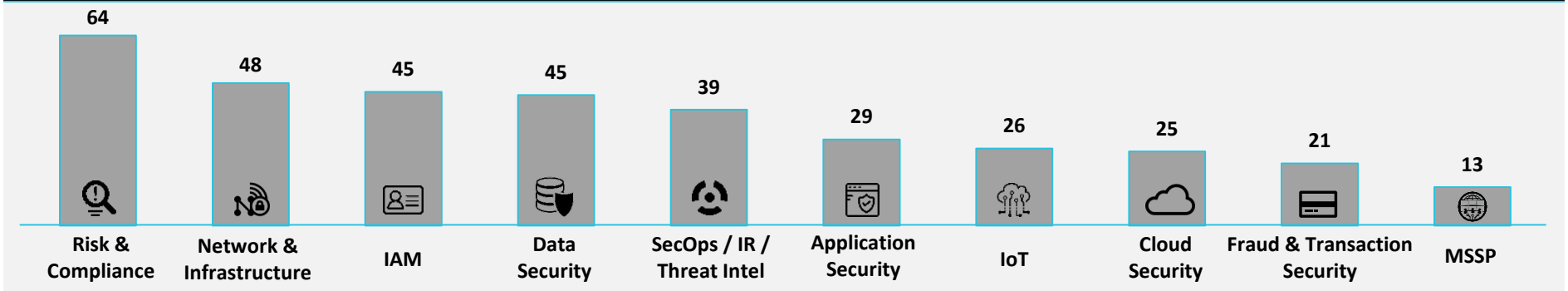
2019 M&A & Financing Volume By Sector

Services Led M&A Activity, While Products Across Risk, Network, Identity, & Data Attracted The Most Financing.

Top 10 Sectors By M&A Activity



Top 10 Sectors By Financing Activity



Source: Momentum Cyber Proprietary M&A & Financing Transaction Database.

OPTIV + Momentum CYBER | 2019 Security Technology Spend Insights Report

A Closer Look At Cybersecurity Buying Trends.

Top 5 Cybersecurity Technology Spending Trends

Identity Management

- Identity management solutions are focused less on the network boundary and more on access privileges and protecting critical assets — the right motion.

'17-'18 Growth **45%**

Vulnerability Management

- Vulnerability management spending offsets the chronic shortage of cybersecurity talent and allows organizations to prioritize vulnerabilities based on risk.

'17-'18 Growth **30%**

Email Security

- Email security investments address a top threat vector, and they will be more effective when paired with employee security awareness and training.

'17-'18 Growth **30%**

Data Protection

- Data protection focuses on where data is secured (on premises or in a cloud model) and whether access to it is secure. Data privacy regulations and compliance will drive spending.

'17-'18 Growth **25%**

Cloud Security

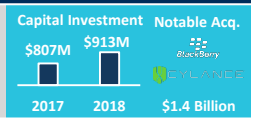
- Cloud security solutions are essential to bring organization-specific security processes and controls into public cloud and multi-cloud environments.

'17-'18 Growth **25%**

Technology Areas To Watch

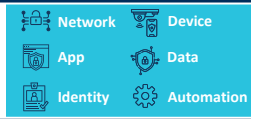
Endpoint Security

- Endpoint security solutions bring security standards to end-user devices and strengthen security by consolidating toolsets.



Zero Trust Architecture

- Zero Trust architecture offers an alternative to perimeter-based security models by incorporating and automating multiple layers of security.



Security Awareness & Training

- Security awareness training programs the weakest link in the security chain, people, and they often are paired with user behavior & insider threat analytics.

Security Automation & Orchestration

- Comprises of automated execution of workflows & scripted execution of tasks, increasing efficiency & amplifying analyst capabilities

Serverless & Container Security

- Allows companies to build and run applications & services in the cloud without worrying about the underlying infrastructure

50% Serverless Growth Over 2018

Source: 2019 Security Technology Spend Insights Report

ADVICE

ACCESS

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