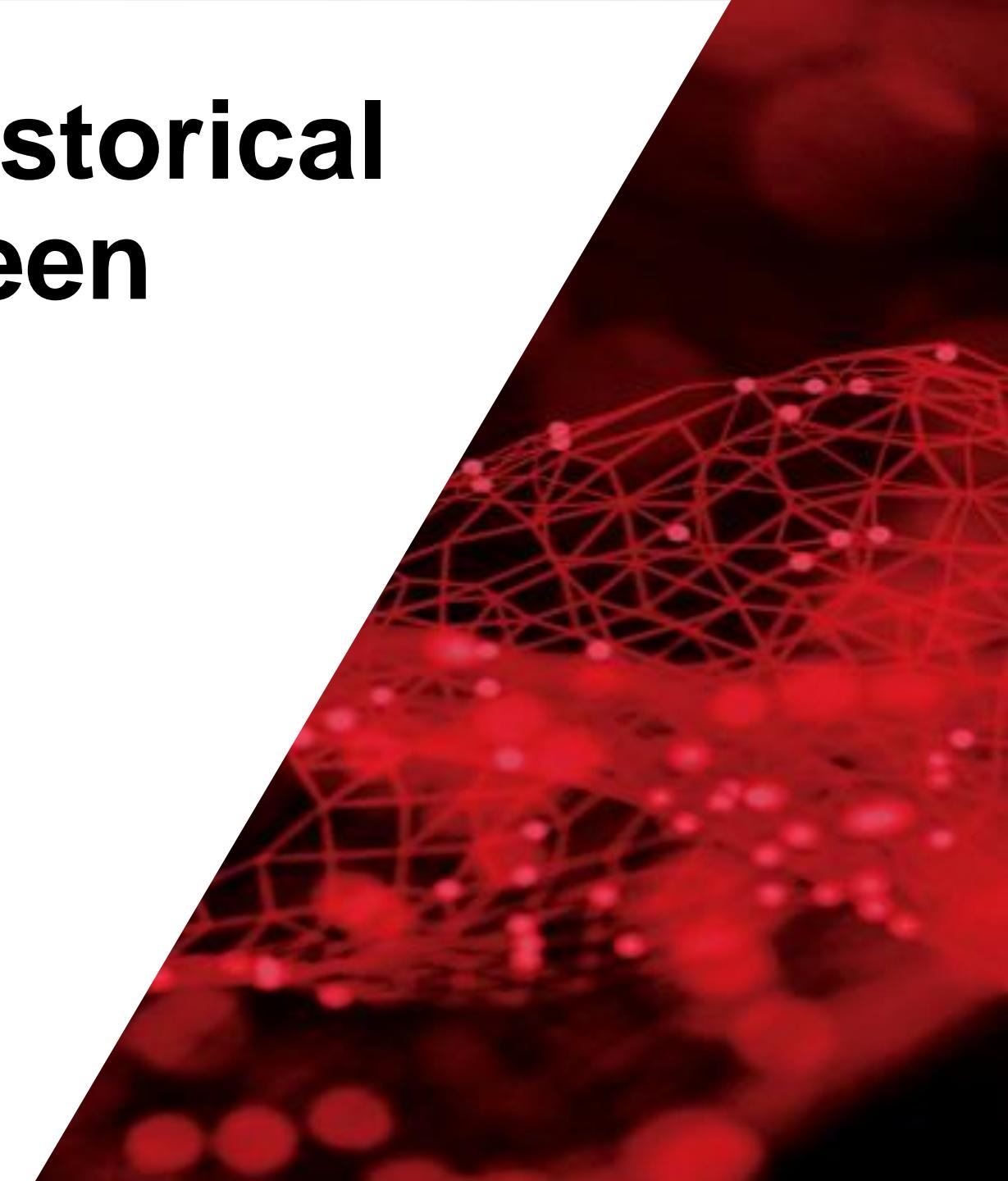


A Walk Through Historical Correlations Between Security Issues & Stock Prices

Alejandro Hernández ([@nitr0usmx](https://twitter.com/nitr0usmx))
Senior Consultant





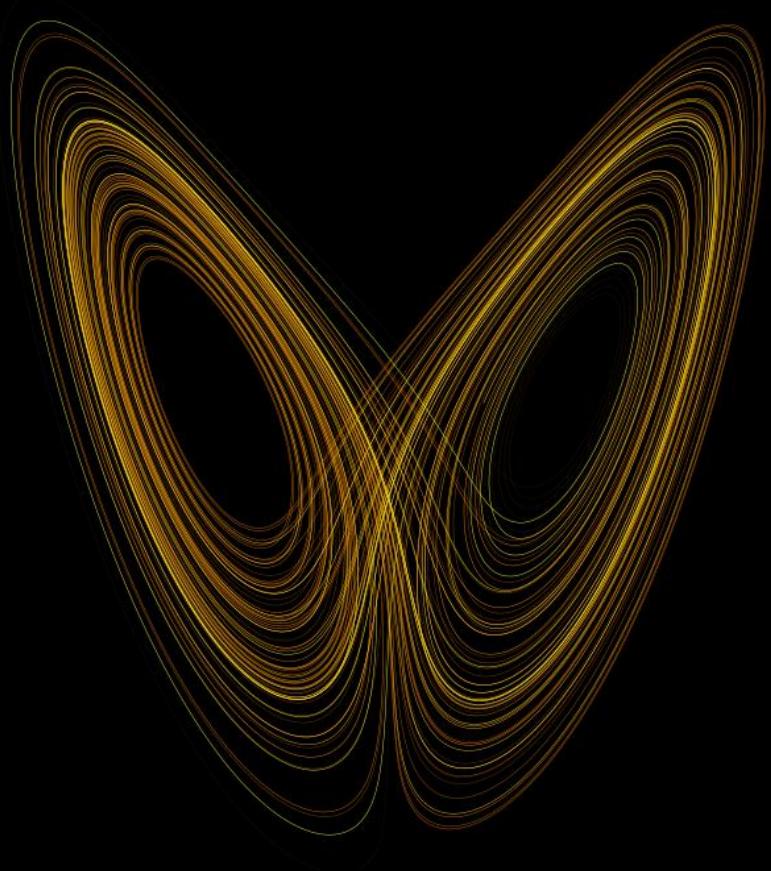
About Me

- From Chiapas, Mexico
- IOActive (+8 years)
- Economics and finance 101 in college
- Worked with financiers in a Big4 for three years
- Stocks trading since ~2013
- Courses in macroeconomics and financial analysis
- Presented at Black Hat USA 2018 vulns in trading technologies



Agenda

- Introduction
- Security issues vs stock prices
 - Vulnerabilities
 - Incidents
 - Sabotage / Espionage
 - Privacy
 - Misleading information
- Do issues in subsidiaries impact parent companies?
- Do issues impact other companies in the supply chain?
- Impact per issue type, term & sector
- Profit / Loss
- Conclusions



It has been said that something as small as the flutter of a butterfly's wing can ultimately cause a typhoon halfway around the world.

The Butterfly Effect

- Chaos Theory



What do



have in common?



Los Angeles Times

Mexican authorities find illegal avocado plantations in monarch butterfly reserve



Mexico: defender of monarch butterflies found dead two weeks after he vanished

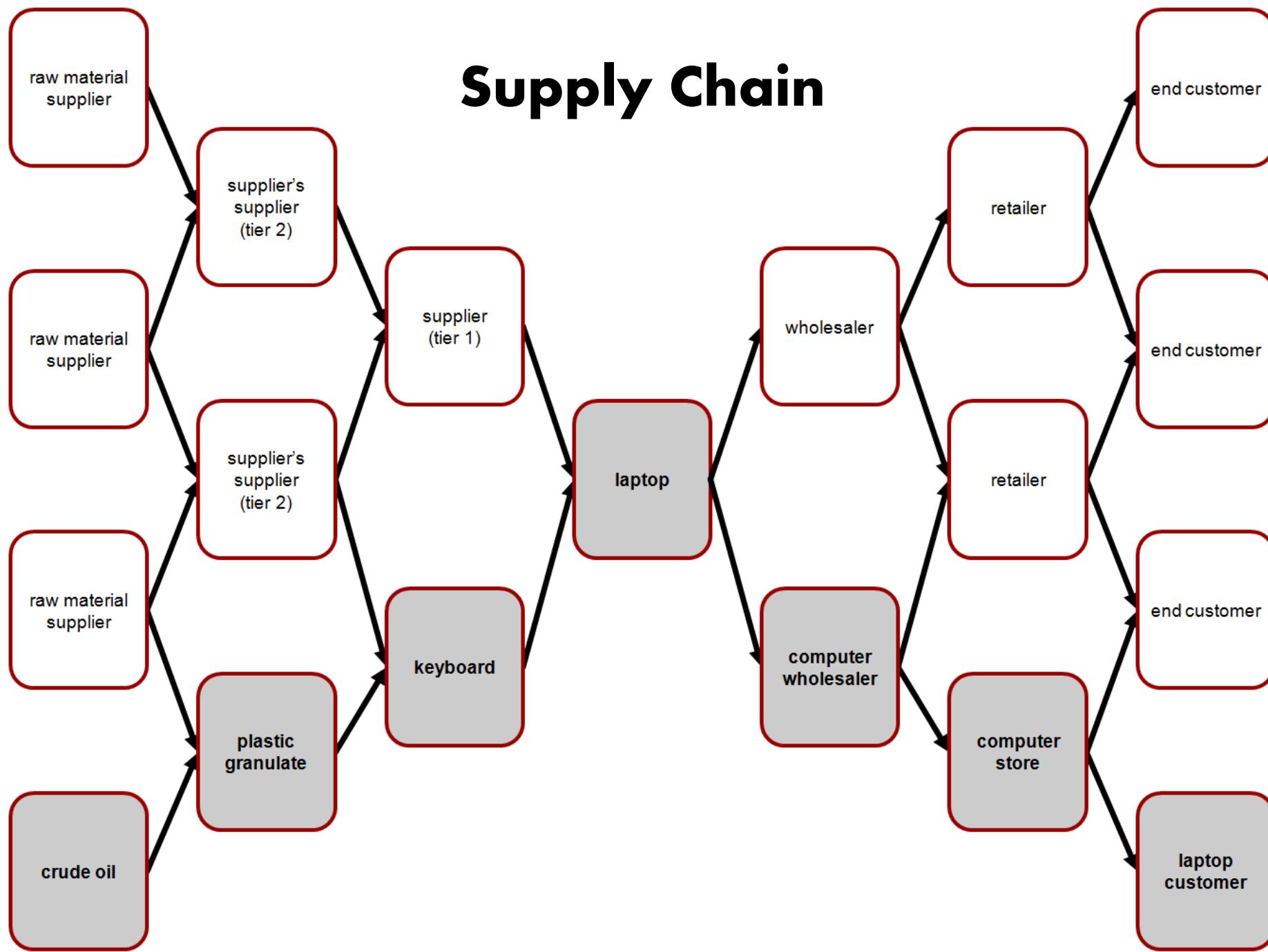
- Homero Gómez González was found floating in a well
- Activists say death could be over illegal logging disputes



GLOBAL
FOREST
WATCH

Forests Falling Fast to Make Way for Mexican Avocado

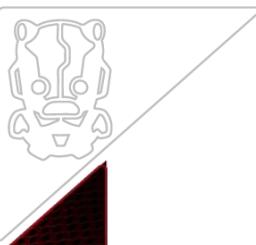
Supply Chain





What affects the stock prices?

- Natural forces
- Fundamentals
- Trade wars
- Sabotage
- (Fake) News
- Economic factors
- Demographics
- Supply chain disruptions
- **Cybersecurity-related issues**
- ... and many more



Security issues vs stock prices





Security issues vs stock prices

- **Attribution** to security incidents vs stock price changes is not too easy
- This was entirely based on ***technicals*** (short-term)
 - Need to go deeper to discover the impact in ***fundamentals*** in the mid- / long-term
 - Losses are quantified in the Quarterly / Annual reports
 - Costs of fixing / incident response / recovery
 - Operational disruptions
 - Regulatory fines
 - Insurance



Vulnerabilities

- \$INTC (Intel)

The “Meltdown” bug is hitting Intel’s shares hard, while rival AMD is soaring

January 4, 2018



By **Joon Ian Wong**
Technology Reporter



▼ Vol 20 116.479M 32.247M





Vulnerabilities

- \$INTC (Intel)

Intel sells off for a second day as massive security exploit shakes the stock

PUBLISHED THU, JAN 4 2018 11:02 AM EST | UPDATED THU, JAN 4 2018 1:31 PM EST



Anita Balakrishnan
@MSABALAKRISHNAN

SHARE





Vulnerabilities

- \$INTC (Intel)

Intel stock rises on earnings beat, security concerns no issue for investors

PUBLISHED THU, JAN 25 2018 3:45 PM EST | UPDATED THU, JAN 25 2018 7:53 PM EST



Jordan Novet
@JORDANNOVET

SHARE

KEY POINTS

- Intel beat expectations amid scrutiny surrounding the Meltdown and Spectre security vulnerabilities.

▼ Vol 20 86.916M 40.81M





Vulnerabilities

- \$ZM (Zoom Video Communications)
Zoom vulnerability would have allowed hackers to eavesdrop on calls

Check Point Research says it figured out which random numbers were valid Zoom calls

By Kim Lyons | Jan 28, 2020, 7:00am EST

   SHARE







Vulnerabilities

- \$TSLA (Tesla, Inc.)

Tesla share price has dropped by more than \$100 in two days

PUBLISHED TUE, FEB 25 2020 7:49 PM EST | UPDATED TUE, FEB 25 2020 7:55 PM EST



Lora Kolodny
@LORAKOLODNY

SHARE

KEY POINTS

- Tesla shares declined for a second day in a row on Autopilot safety criticisms from the National Transportation Safety Board.

Vol 20 25.423M 24.988M





Incidents

- \$TSMC (Taiwan Semiconductor)

HOT STOCKS AUGUST 5, 2018 / 8:15 PM / 2 YEARS AGO

Taiwan's TSMC shares drop over 1.2 pct after computer virus outbreak

1 MIN READ



TAIPEI, Aug 6 (Reuters) - Shares of Taiwan Semiconductor Manufacturing Company Ltd fell more than 1.2 percent on Monday after the world's largest contract chipmaker and Apple Inc supplier said a computer virus outbreak will hit its third-quarter results.



Incidents

- \$TSMC (Taiwan Semiconductor)

Taiwan Semiconductor faces revenue hit after computer virus closes factories

Published: Aug 6, 2018 3:29 a.m. ET



Chip maker says hacker not responsible, most operations are running

The virus, which affected fabrication equipment, forced a number of factories to pause operations Friday. By Sunday, 80% of the equipment was back online, [the Financial Times reported](#), with the rest expected to be ready Monday.

Because of the shutdown, the company faces a 3% revenue hit this quarter, [the Financial Times reported](#), and [shipments will likely be delayed](#).



▼ Vol 20 7.246M 7.569M





Incidents

- \$EFX (Equifax)

Equifax's stock has fallen 31% since breach disclosure, erasing \$5 billion in market cap

Published: Sept 14, 2017 6:25 a.m. ET



Aa

Credit-reporting company's shares rallied Tuesday, but fell 15% Wednesday and are down in premarket action Thursday

Vol 20 518.521K 407.021K



▼ Vol 20 666.048K 726.974K





Incidents

- \$HD (The Home Depot, Inc.)

32,651 views | Sep 18, 2014, 08:21pm



Jewel Samad/AFP

**With 56 Million Cards
Compromised, Home Depot's
Breach Is Bigger Than Target's**

Source: <https://www.forbes.com/sites/katevinton/2014/09/18/with-56-million-cards-compromised-home-depots-breach-is-bigger-than-targets/>

▼ Vol 20 6.028M 7.518M





Incidents

- \$ANTM (Anthem, Inc.)

Anthem hacked, Wall Street shrugs

by Paul R. La Monica @lamonicabuzz

🕒 February 5, 2015: 2:57 PM ET



Wall Street doesn't seem too angry though. Shares of Anthem (ANTM) were only slightly lower Thursday.

Huh? What gives?

One reason investors may not be too worried is because Anthem and other health insurers are doing extremely well thanks to the [Affordable Care Act](#). Obamacare has led to an increase in customers, revenue and profits.

Vol 20 1.675M 2.079M





Incidents

- \$GRMN (Garmin Ltd.)
Garmin reportedly paid hackers a multimillion dollar ransom to recover files after a cyberattack that left their services offline for several days last month

Tyler Sonnemaker Aug 3, 2020, 3:40 PM







Incidents

- \$FEYE (FireEye, Inc.)

FireEye, a Top Cybersecurity Firm, Says It Was Hacked by a Nation-State

The Silicon Valley company said hackers — almost certainly Russian — made off with tools that could be used to mount new attacks around the world.



20.22 0.03 20.25

Vol 20 19.238M 4.466M

25.00





Sabotage / Espionage

- **\$SWI (SolarWinds Inc.)**

SolarWinds hack was work of 'at least 1,000 engineers', tech executives tell Senate

True scope of the breach, which affected 100 companies and several federal agencies, is still unknown



▲ Kevin Mandia, the FireEye CEO, Sudhakar Ramakrishna, the SolarWinds CEO, and Brad Smith, the Microsoft president, testify during a Senate hearing. Photograph: Drew Angerer/UPI/REX/Shutterstock

16.87 0.05 16.92

Vol 20 634.766K 2.025M



16.83 0.06 16.89

Vol 20 4.177M 598.169K





Sabotage / Espionage

- \$SMCI (Super Micro Computer, Inc.)

The Big Hack: How China Used a Tiny Chip to Infiltrate U.S. Companies

The attack by Chinese spies reached almost 30 U.S. companies, including Amazon and Apple, by compromising America's technology supply chain, according to extensive interviews with government and corporate sources.





Sabotage / Espionage

- Saudi Aramco (IPO: Dec 11, 2019)

BUSINESS NEWS SEPTEMBER 16, 2019 / 8:45 AM / 6 MONTHS AGO

Saudi officials considering delaying IPO after drone attack: WSJ





Privacy

- \$FB (Facebook, Inc.)

Facebook shares drop more than 6 per cent on privacy concerns

Marley Jay
The Associated Press

Published Monday, March 19, 2018 10:14AM EDT
Last Updated Monday, March 19, 2018 5:31PM EDT



NEW YORK -- Facebook plunged to its worst loss in four years Monday and led a rout in technology companies. The social media company's stock fell following reports that a data mining firm working for the Trump campaign improperly obtained data on 50 million Facebook users.

The drop in Facebook stock came after the New York Times and the Guardian reported that the firm, **Cambridge Analytica**, was able to tap the profiles of more than 50 million Facebook users without their permission. Legislators in the U.S. and Europe criticized

Vol 20 24.403M 18.736M





Privacy

- \$FB (Facebook, Inc.)

Facebook Stock Drops After Report It Gave More Data Than Previously Revealed to More Than 150 Companies

BY BLOOMBERG

December 19, 2018 6:43 AM EST





Misleading information

- \$FEYE (FireEye, Inc.)

Cisco Isn't Bidding for FireEye, Contrary to Rumors

By Eric J. Savitz Feb. 13, 2020 5:35 pm ET

A person close to Cisco Systems plainly denied market rumors that the company is holding discussions to buy the security software provider FireEye.

FireEye stock (ticker: FEYE) spiked Thursday when the Barcelona-based newspaper OKDiario reported that Cisco (CSCO) was going to launch an offer for FireEye.





Misleading information

- \$PGP (Pimco Global Stocksplus & Income)
 - Vulnerability in PGP encryption software (May 14, 2018)

https://twitter.com/search?q=%24PGP&src=typd

Notificaciones Mensajes  \$PGP

14 may. Attention \$PGP Users exploit has been found , check eff.org for more details. Exploit paper released Trmw(5/15) \$broken \$hacked \$attack eff.org/deeplinks/2018...     

14 may. The Market is Open @themarketisopen · 14 may. \$BPOP \$BPOPM \$BPOP \$MIME \$PGP Popular encrypted email standards are unsafe - European researchers     

The Market is Open News ranking and comments for article Popular encrypted email standards are unsafe - European researchers 





Misleading information

- \$ZOOM (Zoom Technologies) **!=** \$ZM (Zoom Video Communications)

Zoom Technologies soared 56,000% in the past 30 days — as unrelated Zoom Video prepared its IPO

Published: April 18, 2019 at 4:13 p.m. ET

By [Mark DeCambre](#)

A \$100 bet on Zoom Tech a month ago would be worth about \$84,000 today

▼ Vol 20 996.163K 114.409K

1D 5D 1M 3M 6M YTD 1Y 5Y All Go to...

22:59:38 (UTC) adj ext % log auto





Misleading information

- \$ZOOM (Zoom Technologies) **!=** \$ZM (Zoom Video Communications)

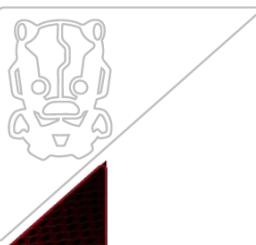
Zoom Teleconferencing Mania Drives Up the Wrong Stock as Investors Seek Virus Plays

By Eric J. Savitz Feb. 27, 2020 1:08 pm ET

As investors cast around for bullish plays on the coronavirus crisis, they have latched on to videoconferencing stock Zoom Video Communications, which

▼ Vol 20 419.06K 106.516K

9.111548
7.000000



Do issues in subsidiaries impact parent companies?





Impact in parent companies

- Yahoo! Data Breach (Dec 14, 2016)
 - \$VZ (Verizon) [agreed to purchase Yahoo! in July 2016. Bought it in June 2017]

Yahoo hack: 1bn accounts compromised
by biggest data breach in history

The latest incident to emerge - which happened in 2013 - is
probably distinct from the breach of 500m user accounts in 2014



Vol 20 19.92M 14.483M





Impact in parent companies

- \$FB (Facebook, Inc.)
 - WhatsApp

NSO GROUP RINGING —

WhatsApp vulnerability exploited to infect phones with Israeli spyware

Attacks used app's call function. Targets didn't have to answer to be infected.

DAN GOODIN - 5/13/2019, 9:00 PM







Do issues impact other companies in the supply chain?





Impact in third-party companies (supply chain)

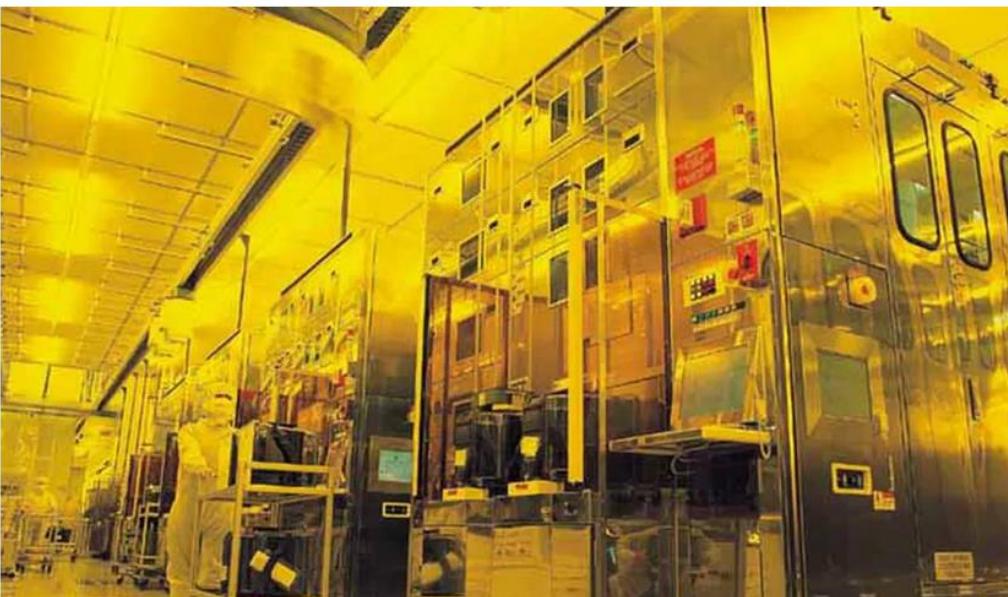
- \$TSMC (Taiwan Semiconductor)

iPhone supplier TSMC shut down factories after virus attack

The company makes processors for Apple, Qualcomm, and others

By Andrew Liptak | @AndrewLiptak | Aug 4, 2018, 1:54pm EDT

f t  SHARE

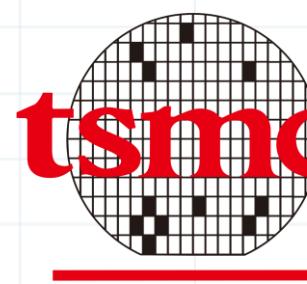


TSMC is the largest semiconductor manufacturer in the world, and supplies components for companies like AMD, Apple, Nvidia, and Qualcomm. The company told *Bloomberg* that the virus infected a “number of its fabrication tools,” but that the “degree of infection varies” from factory to factory. Several have resumed their operations, but others won’t come back online until tomorrow. The company indicated that its factories weren’t infected by a hacker.

“TSMC has been attacked by viruses before,” CFO Lora Ho told *Bloomberg*, “but this is the first time a virus attack has affected our production lines.” She didn’t disclose whether or not the affected lines were producing processors for Apple, nor what revenue has been lost as a result.

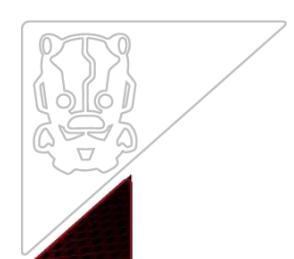
THIS IS THE FIRST TIME THE COMPANY'S PRODUCTION LINES HAVE BEEN AFFECTED BY A VIRUS

Vol 20 33.447M 24.593M

 **tsmc** →

Vol 20 53.232M 72.893M





Impact per issue type, term & sector





Impact

- Are certain security issues more impactful?
- Are some sectors more affected?
- Do companies recover in the short-, medium- or long-term?

Ticker	Name	Sector	Industry	Issue Type	Detailed issue	Date Disclosed	Change %	Recovered < 1 month	Recovered < 3 months	Recovered < 1 year	Recovered > 1 year	Recovered N days
INTC	Intel Corp.	Electronics	Semiconductors	Vulnerability	Meltdown & Spectre vulnerabilities.	Jan 03, 2018	-3.39%	Jan 22, 2018				19
MSFT	Microsoft Corp.	Technology Services	Packaged Software	Vulnerability	EternalBlue vulnerability.	Apr 14, 2017	0.82%					N/A
FB	Facebook, Inc.	Technology Services	Internet Software / Services	Vulnerability	Critical vulnerability in WhatsApp (CVE-2019-3568).	May 13, 2019	-4.04%	May 15, 2019				2
ZM	Zoom Video Communications	Technology Services	Packaged Software	Vulnerability	Vulnerability where anyone could join a video meeting uninvited and listen in, potentially accessing any files or information shared during the meeting.	Jan 28, 2020	1.52%					N/A
ORCL	Oracle Corp.	Technology Services	Packaged Software	Vulnerability	Critical vulnerability in Oracle Database (CVE-2018-3110).	Aug 10, 2018	-0.74%	Aug 20, 2018				10
CTXS	Citrix Systems	Technology Services	Packaged Software	Vulnerability	Critical vulns in Citrix Appliances (CVE-2019-19781).	Dec 17, 2019	-0.44%	Dec 19, 2019				2
IBKR	Interactive Brokers	Finance	Investment Banks / Brokers	Vulnerability	Vulnerabilities in trading platforms.	Aug 08, 2018	0.67%					N/A
TSLA	Tesla, Inc.	Consumer Durables	Motor Vehicles	Vulnerability	Vulnerability in the autopilot system.	Feb 19, 2020	-13.38%					TBD
STJ	St. Jude Medical	Health Care	Medical Equipment	Vulnerability	Vulnerabilities in the pacemakers. They got acquired by Abbott Labs before the stock price recovered.	Aug 25, 2016	-4.06%					N/A
MAT	Mattel, Inc.	Consumer Durables	Recreational Products	Vulnerability	Vulnerability in Hello Barbie.	Nov 25, 2015	1.81%					N/A
TSMC	Taiwan Semiconductor	Electronics	Semiconductors	Incident	Virus infected production lines and some factories had to shutdown.	Aug 03, 2018	-1.20%	Aug 08, 2018				5
BIO	Bio-Rad Laboratories	Health Technology	Medical Specialties	Incident	Ransomware infected the internal network.	Dec 06, 2019	-5.96%		Jan 07, 2020			32
MRK	Merck & Co., Inc.	Health Technology	Pharmaceuticals	Incident	Ransomware (NotPetya) infected more than 30,000 computers.	Jun 27, 2017	-3.28%			Sep 14, 2017		79
EFX	Equifax Inc.	Commercial Services	Miscellaneous Commercial Services	Incident	Data breach (sensitive data of 143 million people).	Sept 07, 2017	-34.85%				Jul 29, 2019	691
MAR	Marriott International	Consumer Services	Hotels / Resorts	Incident	Data breach (guest reservation database with 500 million guests info).	Nov 30, 2018	-5.59%		Feb 19, 2019			81
TGT	Target Corporation	Retail Trade	Specialty Stores	Incident	Data breach (40 million credit and debit card numbers and 70 million records of personal information).	Dec 19, 2013	-2.20%	Dec 20, 2013				1
JPM	JPMorgan Chase & Co.	Finance	Major Banks	Incident	Data breach (83 million accounts – 76 million households and 7 million small businesses). On September 15 there were headlines about the breach; JP Morgan was still investigating, but the stock price was not affected. On Oct 2nd, JP Morgan confirmed in a SEC 8-K filling the amount of the records leaked.	Oct 02, 2014	-1.56%	Oct 03, 2014				1
GPN	Global Payments, Inc.	Technology Services	Data Processing Service	Incident	Data breach (1.5 million credit and debit card numbers).	Mar 30, 2012	-9.06%				Oct 02, 2013	552
COF	Capital One	Finance	Banks	Incident	Data breach (100 million credit card applications).	Jul 29, 2019	-5.89%			Nov 22, 2019		126

Ticker	Name	Sector	Industry	Issue Type	Detailed issue	Date Disclosed	Price Change %	Recovered < 1 month	Recovered < 3 months	Recovered < 1 year	Recovered > 1 year	Recovered N days
FAF	First American Financial Corp.	Finance	Specialty Insurance	Incident	Data breach (885 millions of documents related to mortgage deals).	May 24, 2019	-6.26%	Jun 20, 2019				27
SCHW	The Charles Schwab Corporation	Finance	Investment Banks / Brokers	Incident	Data breach (client investment data).	May 04, 2016	-1.64%	May 10, 2016				6
HKEX: 293	Cathay Pacific Airways Ltd.	Transportation	Airlines	Incident	Data breach (data of 9.4 million passengers).	Oct 24, 2018	-6.02%	Nov 06, 2018				13
AC	Air Canada	Transportation	Airlines	Incident	Data breach (20,000 mobile app users data).	Aug 28, 2018	-0.22%	Sept 11, 2018				14
VZ	Verizon Communications	Communications	Telecommunications	Incident	Data breach (1 million accounts) in Yahoo!	Dec 14, 2016	-1.39%	Dec 16, 2016				2
TM	Toyota Motor Corp.	Consumer Durables	Motor Vehicles	Incident	Data breach (personal data of 3.1 million clients).	Mar 29, 2019	-0.88%	Apr 01, 2019				3
SNE	Sony Pictures Entertainment Inc.	Consumer Durables	Electronics / Appliances	Incident	Data breach (PII of employees and their families, execs salaries, unreleased films, plans for future films and scripts).	Nov 24, 2014	1.84%					N/A
ANTM	Anthem, Inc.	Health Services	Managed Health Care	Incident	Data breach (PII of 78.8 million people). In the first announcement they reported 37.5 million records, then, 78.8 on Feb 24.	Feb 04, 2015	0.50%					N/A
ANTM	Anthem, Inc.	Health Services	Managed Health Care	Incident	Data breach (PII of 78.8 million people). In the first announcement they reported 37.5 million records, then, 78.8 on Feb 24.	Feb 24, 2015	-0.05%	Mar 12, 2015				16
CYH	Community Health Systems	Health Services	Hospital / Nursing Management	Incident	Data breach (PII of 4.5 million patients).	Aug 18, 2014	1.29%					N/A
TJX	The TJX Companies, Inc.	Retail Trade	Apparel / Footwear	Incident	Data breach (45.7 million records) by breaking into the retail company's wireless LAN protected with WEP.	Jan 17, 2007	-0.74%	Jan 19, 2007				2
UAA	Under Armour, Inc.	Consumer Non-Durables	Apparel / Footwear	Incident	Data breach (150 million MyFitnessPal accounts).	Mar 29, 2018	-1.53%	Apr 03, 2018				5
HD	The Home Depot, Inc.	Retail Trade	Home Improvement Chains	Incident	Data breach (card information of 56 million customers).	Sept 18, 2014	-0.54%	Sept 24, 2014				6
EBAY	eBay Inc.	Consumer Services	Other Consumer Services	Incident	Data breach (145 million encrypted passwords).	May 21, 2014	-0.15%	May 22, 2014				1
GRMN	Garmin Ltd.	Electronic Technology	Telecommunications Equipment	Incident	Ransomware attack that encrypted internal systems and prevented customers from accessing online services.	Jul 23, 2020	-3.45%	Jul 27, 2020				4
FEYE	FireEye, Inc.	Technology Services	Information Technology Services	Incident	Hacked by foreing government.	Dec 08, 2020	-13.08%	Dec 18, 2020				10

Ticker	Name	Sector	Industry	Issue Type	Detailed issue	Date Disclosed	Price Change %	Recovered < 1 month	Recovered < 3 months	Recovered < 1 year	Recovered > 1 year	Recovered N days
SMCI	Super Micro Computer, Inc.	Electronic Technology	Computer Communications	Sabotage / Espionage	Allegations of compromised hardware that was sold to the US government.	Oct 04, 2018	-41.12%			Apr 01, 2019		180
SMCI	Super Micro Computer, Inc.	Electronic Technology	Computer Communications	Sabotage / Espionage	Allegations of compromised hardware that was sold to the US government.	Oct 09, 2018	-15.52%			Apr 01, 2019		175
SWI	SolarWinds Inc	Technology Services	Packaged Software	Sabotage / Espionage	Hacked by foreing government.	Dec 13, 2020	-39.78%					?
FB	Facebook, Inc.	Technology Services	Internet Software / Services	Privacy	Cambridge Analytica had access to data on 50 million Facebook users.	Mar 17, 2018	-17.75%		May 10, 2018			53
FB	Facebook, Inc.	Technology Services	Internet Software / Services	Privacy	Facebook shared more user data with third-party companies than it has previous	Dec 19, 2018	-13.00%	Jan 09, 2019				21
FB	Facebook, Inc.	Technology Services	Internet Software / Services	Privacy	Zuckerberg's emails on questionable privacy practices.	Jun 12, 2019	-1.72%	Jun 14, 2019				2
PGP	Pimco Global Stocksplus & Income	Miscellaneous	Investment Trusts / Mutual Funds	Misleading information	Vulnerability in PGP encryption software was confused with this share.	May 14, 2018	N/A					N/A
FEYE	FireEye, Inc.	Technology Services	Information Technology Services	Misleading information	A rumor that it'd acquired by Cisco.	Feb 13, 2020	4.57%					N/A
ZOOM	Zoom Technologies, Inc.	Miscellaneous	Miscellaneous	Misleading information	Unrelated Zoom Video Communications prepared its IPO and people started to invest in Zoom Technologies.	Apr 18, 2019	56000.00%					N/A
ZOOM	Zoom Technologies, Inc.	Miscellaneous	Miscellaneous	Misleading information	People wanted to invest in \$ZM but instead, they were investing in \$ZOOM.	Feb 28, 2020	145.45%					N/A



Impact

- Key points
 - **Vulnerabilities**
 - Do not impact as bad as we thought
 - Low impact
 - Avg: < 4% drop
 - Recover quickly
 - Avg: < 1 month
 - ~40% did not impact negatively in the stock price



Impact

- Key points
 - Incidents
 - Impact more than vulns
 - Avg: **> 5% drop**
 - Recovery depends on the amount and sensitivity of the data leaked
 - **~63% recovered in < 1 month**
 - Even when credit/card data and PII was leaked



Impact

- Key points
 - **Issues vs national security or politics**
 - E.g. Cambridge Analytica or the allegedly Super Micro spy chips
 - Bigger impact
 - > 15% drop



Impact

- Key points
 - Data breaches
 - The **finance** sector is the **most impacted**
 - The ones related with payment processing or credit/debit cards are more affected
 - The **health care** sector is the **least impacted**



Impact

- Key points
 - Overall
 - **~50%** recovered in **less than a month**
 - **Most** companies recovered in **less than a year**
 - Recovered in **more than a year**
 - \$EFX (Equifax, Inc. Breach: Sept 2017)
 - \$GPN (Global Payments, Inc. Breach: Mar 2012)



Impact

- Key points
 - **Older** data breaches (< 2015) did not have a sharp price drop and recovered in less than one week
 - \$SNE (Sony Pictures Entertainment Inc.)
 - \$TGT (Target Corporation)
 - \$JPM (JPMorgan Chase & Co.)
 - \$TJX (The TJX Companies, Inc.)
 - \$HD (The Home Depot, Inc.)
 - \$ANTM (Anthem, Inc.)
 - \$EBAY (eBay Inc.)



Profit / Loss





Profit

- Short-sellers
 - \$STJ (St. Jude Medical) [no longer in the market]

Short seller Muddy Waters renews claims of St. Jude Medical cyber vulnerabilities

Published: Oct 19, 2016 1:17 p.m. ET



Aa

St. Jude blasts Muddy Waters for 'irresponsible release of information that is intended for financial gain'



"This behavior continues to circumvent all forms of responsible disclosure related to cybersecurity and patient safety and continues to demonstrate total disregard for patients, physicians and the regulatory agencies who govern this industry," the company said. "Patients, physicians, and caregivers deserve better than the irresponsible release of information that is intended for financial gain and is unnecessarily frightening."



Profit

- Insider traders
 - \$EFX (Equifax, Inc.)

Former Equifax executive charged with insider trading for dumping nearly \$1 million in stock ahead of data breach

PUBLISHED WED, MAR 14 2018 10:21 AM EDT | UPDATED WED, MAR 14 2018 3:26 PM EDT



Profit

- People
 - #BTFD





Losses

- Companies
 - Market cap
 - Competitive advantage
 - Market share
 - Reputation
 - Social sentiment
- People
 - Net worth
 - Margin calls





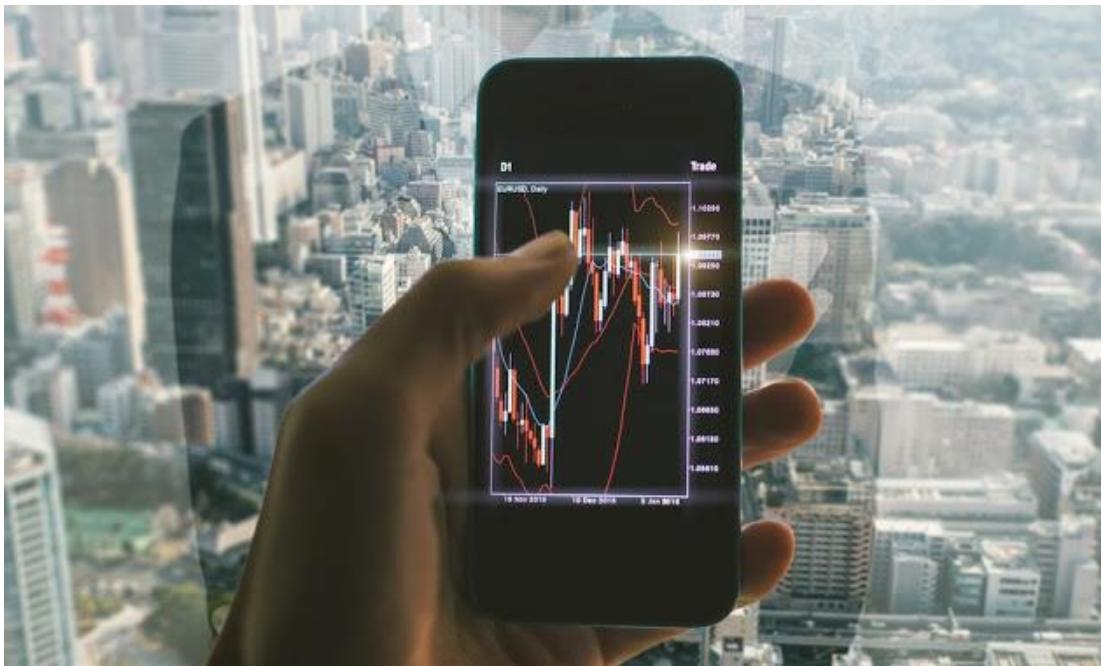
Avoid losing money

- As a company
 - Assess your supply chain to enhance resilience
 - Assess continually your products and services
 - Conduct third-party testing
 - *“Eight Steps to Improving Your Supply Chain Security Program”*
 - *“Thoughts on Supply Chain Integrity”*



Avoid losing money

- As an investor
 - Stay alert with price changes
 - Keep an eye on the news
 - Set stop-loss orders



Conclusions





Conclusions

- Security issues do **impact negatively** on stock prices but **recover quickly**
- This was first approach
 - **More data = more accurate results**

Thanks.

Questions?

Alejandro Hernández ([@nitr0usmx](https://twitter.com/nitr0usmx))
Senior Consultant

IOActive[®]

