

RSA® Conference 2018

San Francisco | April 16–20 | Moscone Center

SESSION ID: SEM-M04

DIGITAL TRANSFORMATION & CYBER EXPOSURE

Renaud Deraison

Chief Technology Officer & Co-Founder
Tenable





DIGITAL TRANSFORMATION



“Driving the digital agenda and cognitive autonomous analytics is the new frontier: software and hardware that detects, learns and/or causes a change of state, through the direct monitoring and/or control of physical devices, processes and events in the enterprise utilizing digital data. Autonomous solutions are the future.”

Jason Molfetas, CIO @ Amtrak

Fixed Income, Currency and Commodities

Progress across FICC initiatives

Initiative	Progress
Close market share gaps with Asset Managers and Banks	 Enhancing cash/flow trading capabilities  Built deeper, more granular client coverage model  Using detailed third-party data to identify client gaps  Holding ourselves accountable to deliver top 3 rankings
Strengthen corporate offering	 18 of 21 market share metrics across products higher YoY
Client inventory financing	 16 new commodity-related transactions resulting from J.V. with Investment Banking

Deploying engineering capabilities to support growth efforts

7,000

Unique Marquee users/month across 2,000 institutions, up ~60% YoY¹

~25%

Engineers as % of FICC headcount²

~33%

YoY growth in clients trading via Systematic Market Making (SMM)

¹ Represents Marquee users across FICC and Equities as of December 2017

² Includes Sales, Strats and Market-Making functions within FICC

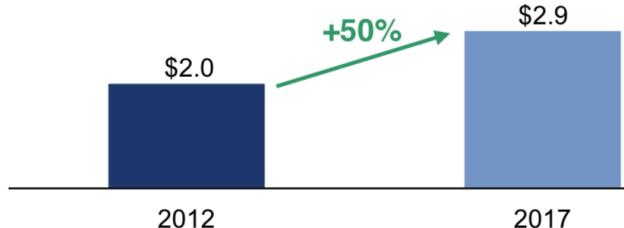
Investment Banking

Progress in client coverage

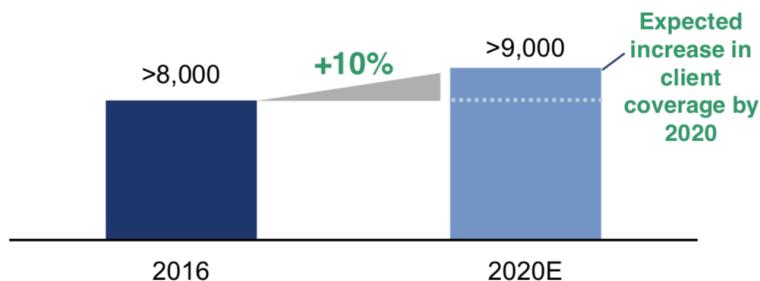
Debt Underwriting League Table Ranking¹



Debt Underwriting Net Revenues (\$bn)



Investment Banking Client Coverage



- New coverage assigned on >30% of targeted clients
- Regional strategy implemented (Seattle, Toronto, Atlanta, Dallas)
- Expanding coverage model by optimizing existing senior talent and making additional lateral hires
- Awarded >75 new mandates to date from client coverage expansion efforts

Engineering enhances client engagement through apps, machine learning and big data analytics

¹ High Yield and Investment Grade Underwriting sourced from Dealogic. Leveraged Loans sourced from Bloomberg

Wall Street's Big Banks Are Waging an All-Out Technological Arms Race

Dimon, Blankfein, Gorman: Three great rivals are battling to control the \$58 billion-a-year equities industry.

By **Hugh Son** and **Dakin Campbell**

April 5, 2018, 11:00 AM GMT+2

From **Bloomberg Markets**

Sunlight bounced off Goldman Sachs Group Inc.'s glass-and-steel Manhattan

headquarters on a warm August morning in 2013. Eyes locked on their screens, traders and engineers shifted in their seats as exchanges prepared to open.

Unbeknownst to anyone, the machines were about to revolt.



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THREE MAJOR SHIFTS

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#1: IoT



Hipchair
Healthy Intelligent Comfortable

AVOID BACK PAIN PROBLEMS WITH OUR **CONNECTED CUSHIONS**



Your talent HubFor Europe,
the Middle East and Africa



REAL-TIME
HIGH-THRU
FOR DENSE
NETWO



CONN
COLLAB
RO

AFRI



IoT: Spectrum of Hurt



Less Secure

More Secure



Vendors with no software experience but used to maintain devices for 30 years

Vendors with extensive software experience but used to maintain devices for 5 years at most

IoT: Attack Surface on Multiple Levels



Data in the Cloud*

Transport Layer*

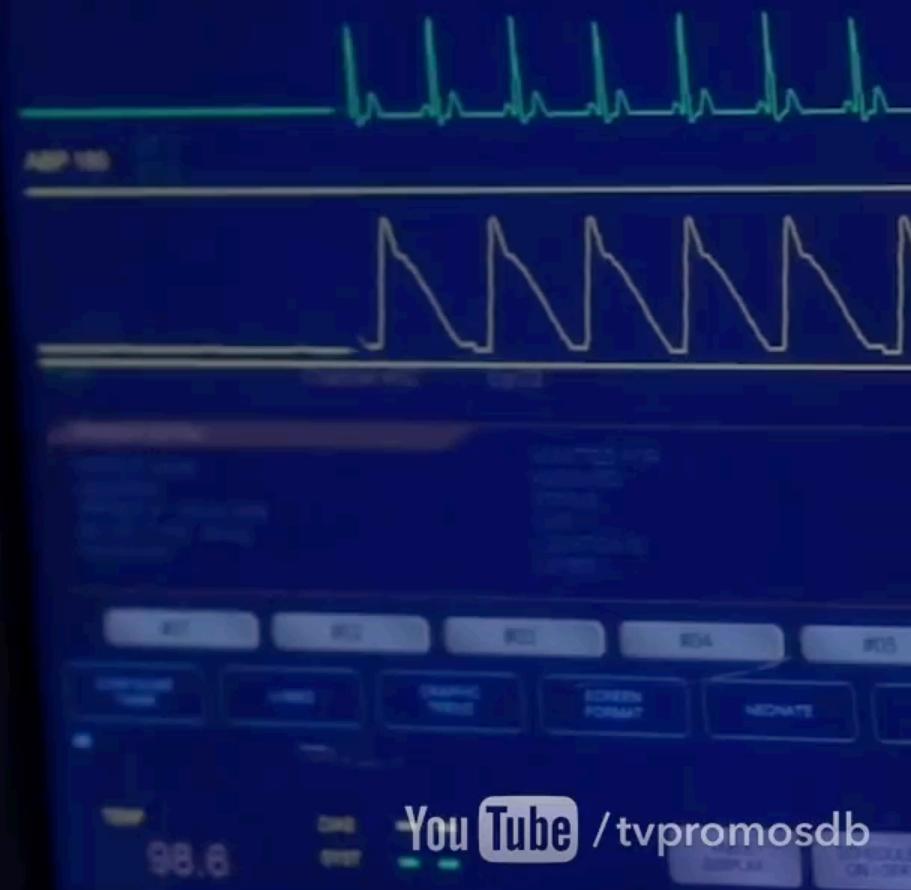
App

OS

Hardware

AVENUE





You Tube /tvpromosdb

IoT Is Everywhere..And Can Be Useful



- Several companies building their own IoT devices
- Most new offices use IoT extensively
- Industrial control systems are now connected to the internet
- Healthcare can better centralize patients' data
- **No oversight from traditional IT teams as far as deployment goes. Security will “figure it out”**

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#2: BUSINESS APPLICATIONS

[Advice & How To](#)[Tech Topics](#)[Podcasts](#)

HOW INNOVATION HAPPENS

Why Software Is Eating the World

by Marc Andreessen



how innovation happens

This article was originally published in *The Wall Street Journal* on August 20, 2011.

This week, Hewlett-Packard (where I am on the board) announced that it is exploring jettisoning its struggling PC business in favor of investing more heavily in software, where it sees better potential for growth. Meanwhile, Google plans to buy up the cellphone handset maker Motorola Mobility. Both moves surprised the tech world. But both moves are also in line with a trend I've observed, one that makes me optimistic about the future growth of the American and world economies, despite the recent turmoil in the stock market.

In short, software is eating the world.

More than 10 years after the peak of the 1990s dot-com bubble, a dozen or so new Internet companies like Facebook and Twitter are sparking controversy in Silicon Valley due to their rapidly growing private market valuations, and even the



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Oops! Don't say 'Google' in your Alexa voice app, Amazon said

CRUNCH NETWORK

Software is still eating the world

Posted Jun 7, 2016 by [Jeetu Patel \(@jpatel41\)](#)



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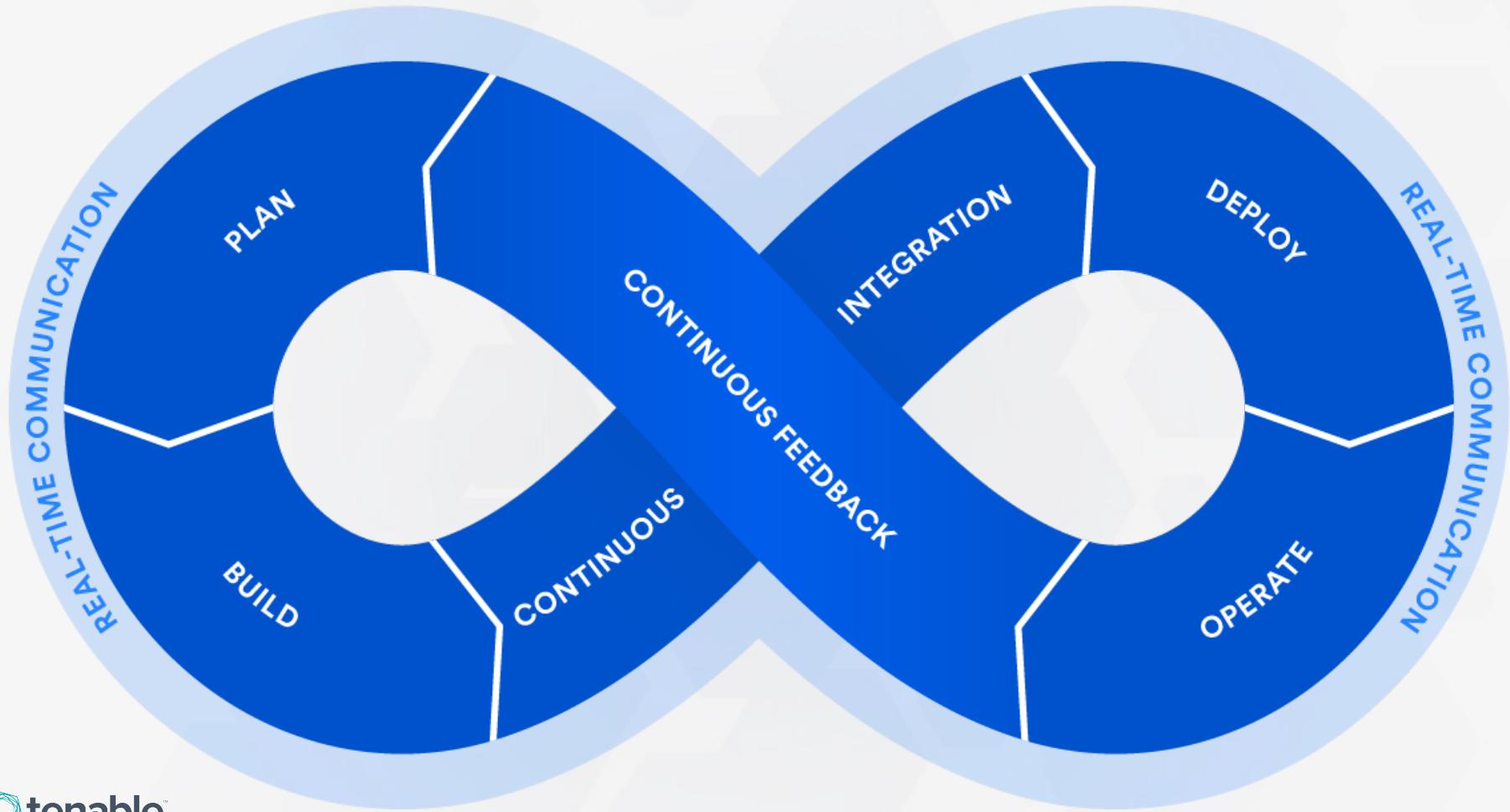
Crunchbase

[Marc Andreessen](#)

BIO

Marc Andreessen is a cofounder and general partner of the venture capital firm Andreessen Horowitz. He is an innovator and creator, one of the few to pioneer a software category used by more than a billion people and one of the few to establish multiple billion-dollar companies. Marc co-created the highly influential Mosaic Internet browser and cofounded Netscape, which later sold to AOL for \$4.2 ...

[Full profile for Marc Andreessen](#)



Project Execution Methodologies – The Change



WATERFALL

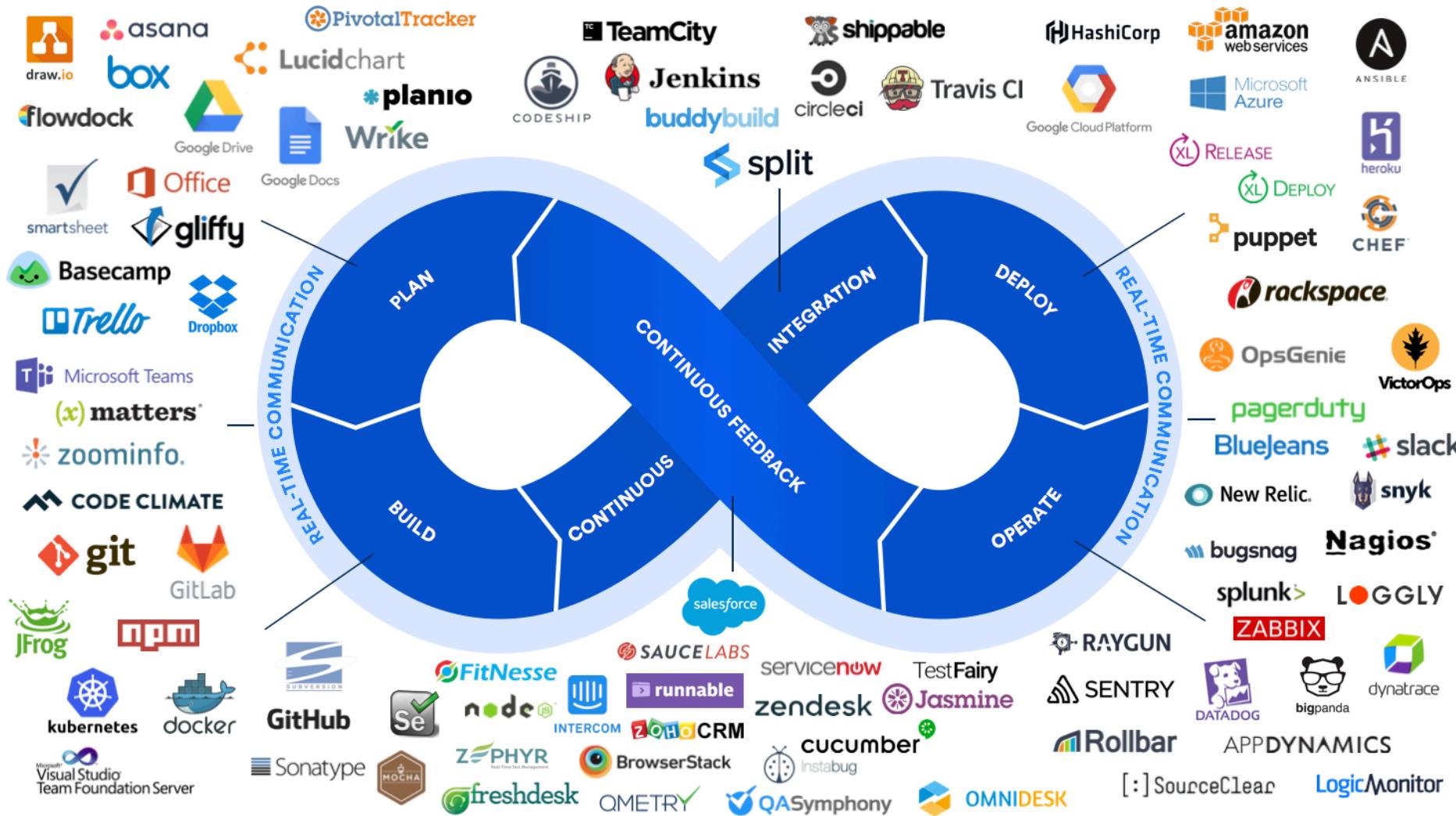


AGILE



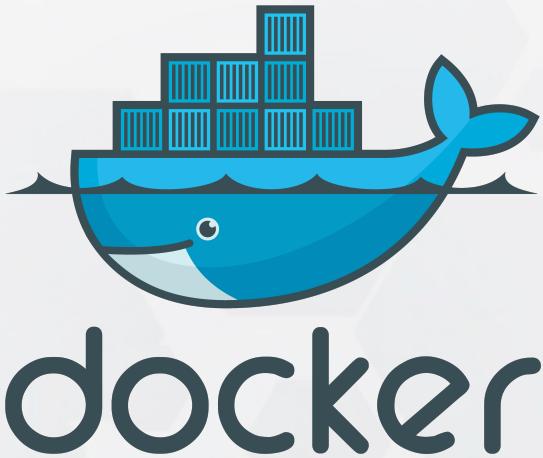
DEVOPS







Google Cloud Platform





Business Applications

- Every company is a software company
- DevOps is being adopted mostly everywhere
- Public Cloud is being adopted mostly everywhere
- New technologies are changing the definition of a “server” (microservices, containers, lambda...)
- SaaS is being adopted mostly everywhere – as a building block or a standalone app
- Developers have more and more say about the entire company’s infrastructure
- **Little to no oversight from traditional IT teams as far as deployment goes. Security will “figure it out”**

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#3: ENDPOINTS & END-USERS

Endpoints Are More Secure



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WIRED www.wired.com/2016/09/top-shelf-iphone-hack-now-goes-1/ [SIGN IN](#) | [SUBSCRIBE](#)

BUSINESS CULTURE GEAR IDEAS SCIENCE SECURITY TRANSPORTATION

A Top-Shelf iPhone Hack Now Goes for \$1.5 Million

LILY HAY NEWMAN SECURITY 09.29.16 08:00 PM

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A TOP-SHELF iPhone HACK NOW GOES FOR \$1.5 MILLION

JOSH VALCARCEL/WIRED

AS iOS AND Android mature, the stand-off between platforms and hackers escalates in kind. Each release brings new security measures, while those who want to break in—nation-state intelligence agencies and law enforcement among them—redouble their efforts. And one security startup that buys and sells exploits is offering to pay more than ever for exclusive access to premium vulnerabilities.

On Thursday, exploit broker Zerodium announced that its bug bounty for zero-day (previously undisclosed) exploits now tops out at \$1.5 million for Apple's new iOS 10. That's

WIRED www.wired.com/2016/11/hackers-claim-million-dollar-bounty/ [SUBSCRIBE](#)

BUSINESS CULTURE DESIGN GEAR SCIENCE SECURITY TRANSPORTATION

Hackers Claim Million-Dollar Bounty for iOS Zero Day Attack

ANDY GREENBERG SECURITY 11.02.16 2:35 PM

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HACKERS CLAIM MILLION-DOLLAR BOUNTY FOR IOS ZERO DAY ATTACK

JOSH VALCARCEL/WIRED

HACKING APPLE'S iOS isn't easy. But in the world of cybersecurity, even the hardest target isn't impossible—even expensive. And the price of a working attack that can compromise the latest iPhone is apparently somewhere around \$1 million.

On Monday, the security startup Zerodium announced that it's agreed to pay out that seven-figure sum to a team of hackers who have successfully developed a technique that can hack any iPhone or iPad that can be tricked into visiting a carefully crafted web site. Zerodium describes that technique as a "jailbreak"—a term used by iPhone owners to hack their own phones to install unauthorized apps. But make no mistake: Zerodium and its founder Chaouki Bekrar have made clear that its customers include governments who no doubt use such "zero-day" hacking techniques on unwitting surveillance targets.

In fact, Bekrar tells WIRED that two teams of hackers had attempted to claim the bounty, which was announced in September with an October 31st deadline. Only one proved to have developed a complete, working iOS attack. "Two teams have been actively working on the challenge but only

Endpoints Are More Secure

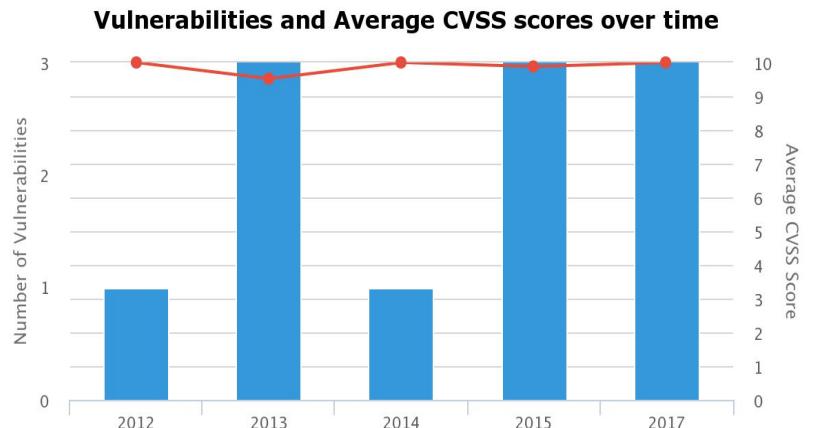


The Apple Sandbox

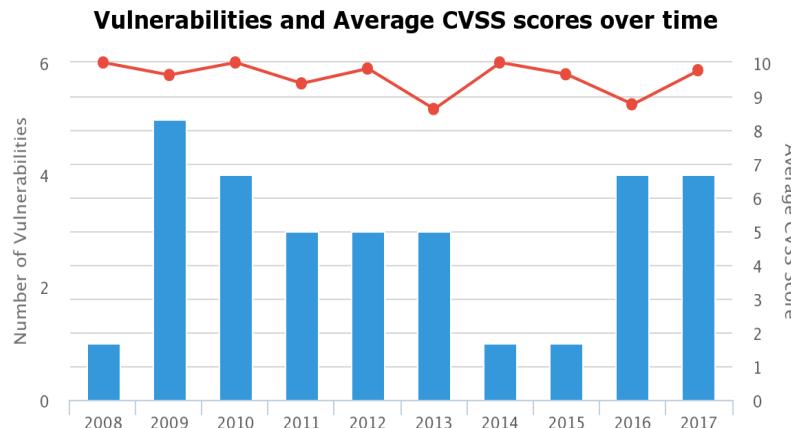
- Introduced way back in Mac OS 10.5 as “Seatbelt”
 - Very naïve implementation originally, bypassed and opt-in
- Revamped in Mac OS 10.7 as “The App Sandbox”
 - Stronger implementation, introducing containers
 - Opt-in for Apple’s own binaries and apps
 - Mandatory for Mac App Store apps (but not for DMG based)
- Far stronger still in iOS
 - Mandatory for all third party applications
 - Evolved beyond Mac OS implementation

© 2012, 2016 Technologeeks.com

Endpoints Are More Secure



Windows 8



Windows Vista

End Users Have More Power



- Now that the businesses are digitalized, end-users can do much more damage
- **Users' security awareness and role within the organization increasingly need to be taken into account when computing risk**
- Endpoints devices tend to be less and less managed centrally since they're more secure
- Cerebro will eventually need to take data from Workday and/or Salesforce into consideration



ABP



nytimes.com



U.S. | Hawaii Panics After Alert About Incoming Missile Is Sent in Error



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U.S.

Hawaii Panics After Alert About Incoming Missile Is Sent in Error

By ADAM NAGOURNEY, DAVID E. SANGER and JOHANNA BARR JAN. 13, 2018



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A photo accidentally revealed a password for Hawaii's emergency agency



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By **Travis M. Andrews** January 23  Email the author



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L'Obs > Tech

TV5 Monde laisse traîner ses mots de passe devant les caméras



Alors que de nombreuses caméras de télévision filmaient la rédaction de TV5 Monde, certains mots de passe, affichés au mur, ont été diffusés à l'antenne.

SUR LE MÊME SUJET



TV5 Monde : un serveur avait été piraté 15 jours avant la cyberattaque



TV5 Monde : "Un acte terroriste d'un nouveau genre"



Ce que l'on sait de la cyberattaque sans précédent de TV5 Monde



TV5 Monde piratée : "Une cyberattaque d'une ampleur inédite"

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CYBER EXPOSURE

- **The Digital Infrastructure is now a strategic component of every organization**
 - IOT, Application Security, Endpoints and End-users are changing the game
- **Cyber Exposure needs to be managed effectively**
 - Coverage and detection are key
 - Application security will become more and more strategic
 - Visualization of the infrastructure more important than fixing issues
 - Collected data must be turned into valuable insight



“The challenge will not be our ability to generate data, but rather taking increasing data volume and complexity and translating it into clear, compelling insights that impact operational efficiencies, revenue generation and customer satisfaction.”

Jason Molfetas, CIO @ Amtrak

THANK YOU