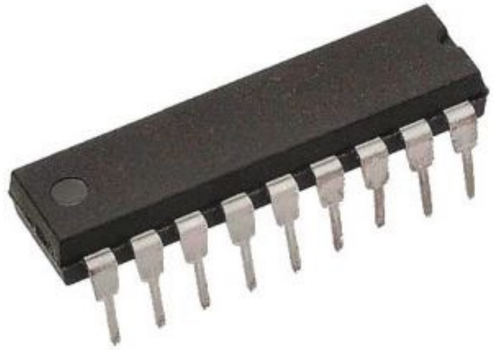

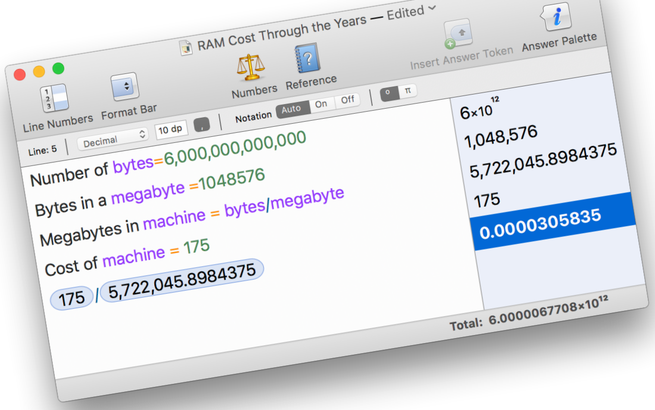

Cove Apple Club

August 24, 2016


DRAG 'N' DROP 'HACKING' —

Hints suggest an insider helped the NSA "Equation Group" hacking tools leak

Structure of leaked files, other factors suggest someone inside "air gap" snuck them out.

SEAN GALLAGHER - 8/22/2016, 6:05 PM

Tonight’s Topics

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- Apple In The News: iPhone Backdoor Revisited

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- A Trip Down “Memory” Lane

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- OFA on AWS

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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

EASTERN DIVISION

IN THE MATTER OF THE SEARCH OF AN APPLE IPHONE SEIZED DURING THE EXECUTION OF A SEARCH WARRANT ON A BLACK LEXUS IS300, CALIFORNIA LICENSE PLATE 35KGD203

ED No. CM 16-10 (SP)

APPLE INC.'S REPLY TO GOVERNMENT'S OPPOSITION TO APPLE INC.'S MOTION TO VACATE ORDER COMPELLING APPLE INC. TO ASSIST AGENTS IN SEARCH

Hearing:
Date: March 22, 2016
Time: 1:00 p.m.
Place: Courtroom 3 or 4
Judge: Hon. Sheri Pym

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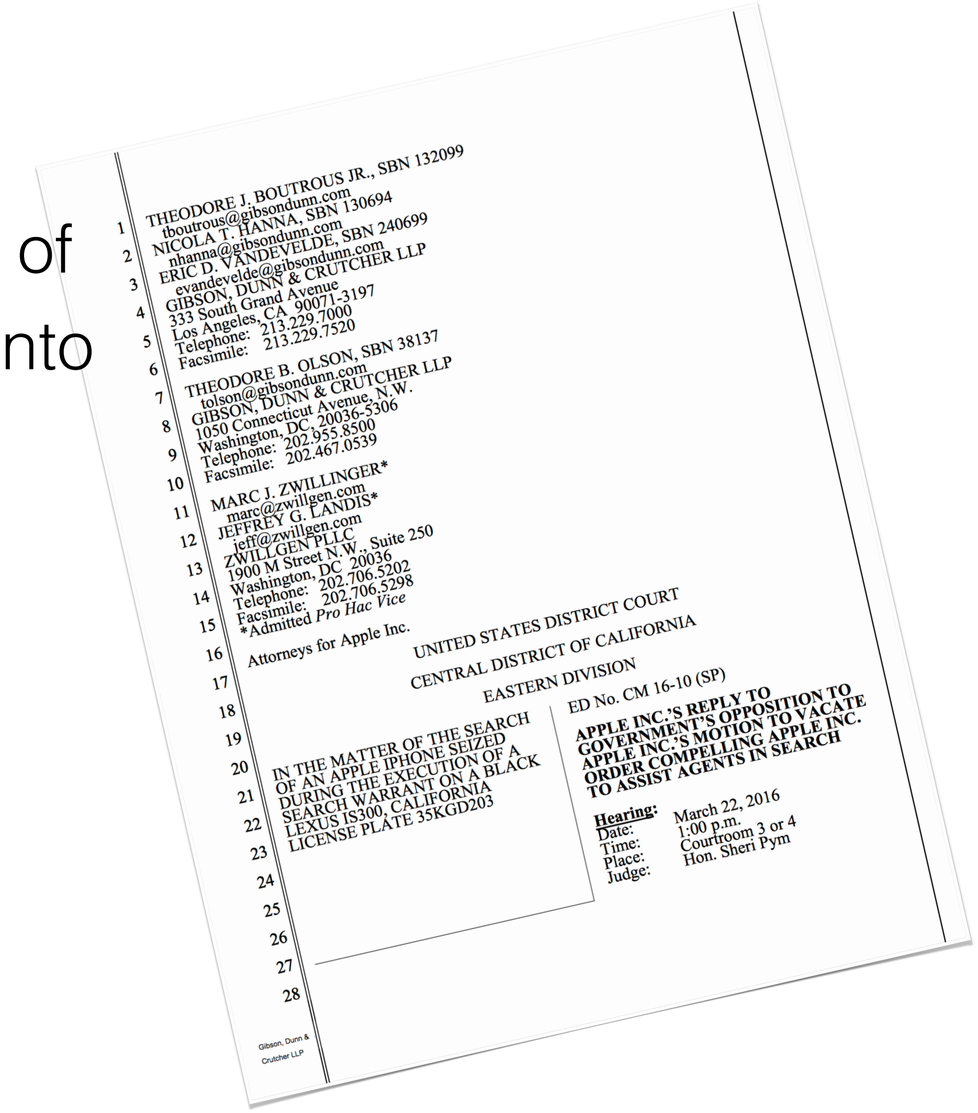

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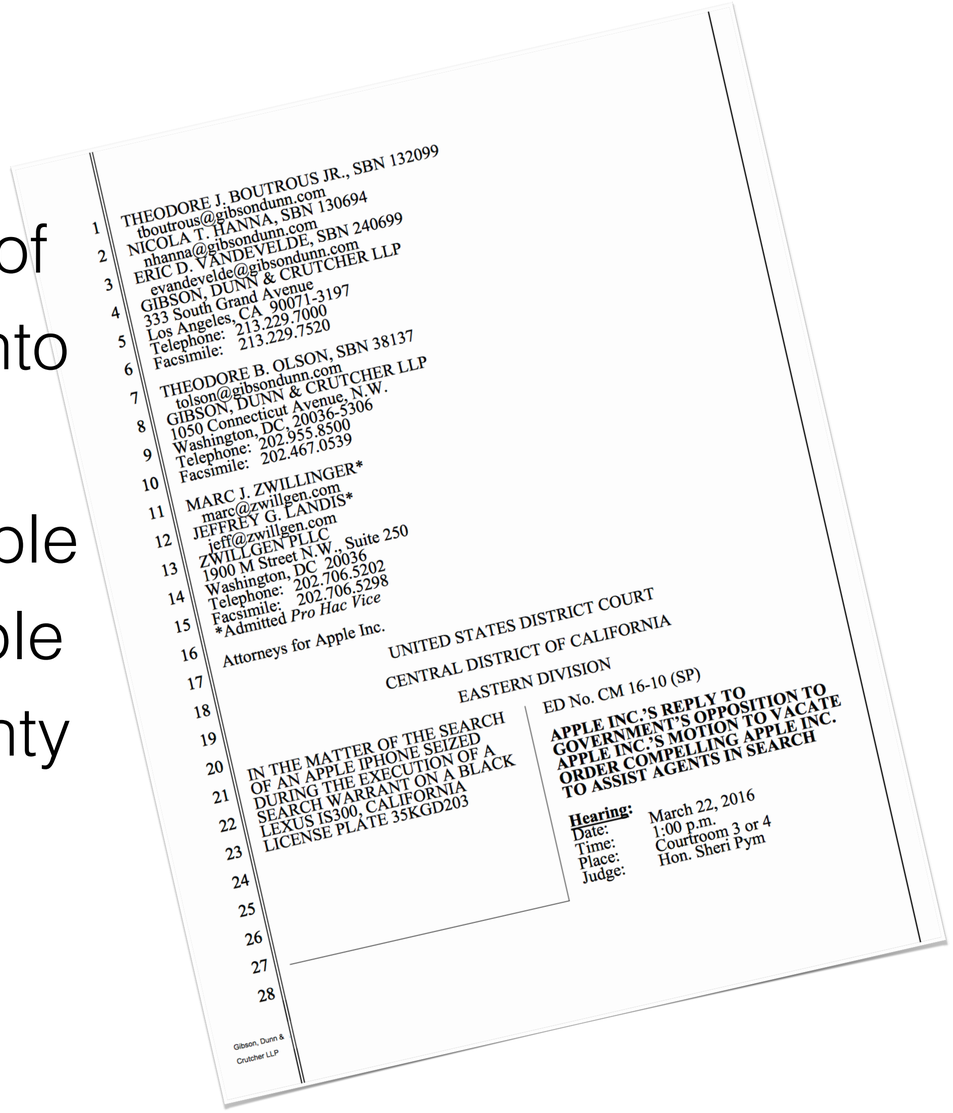

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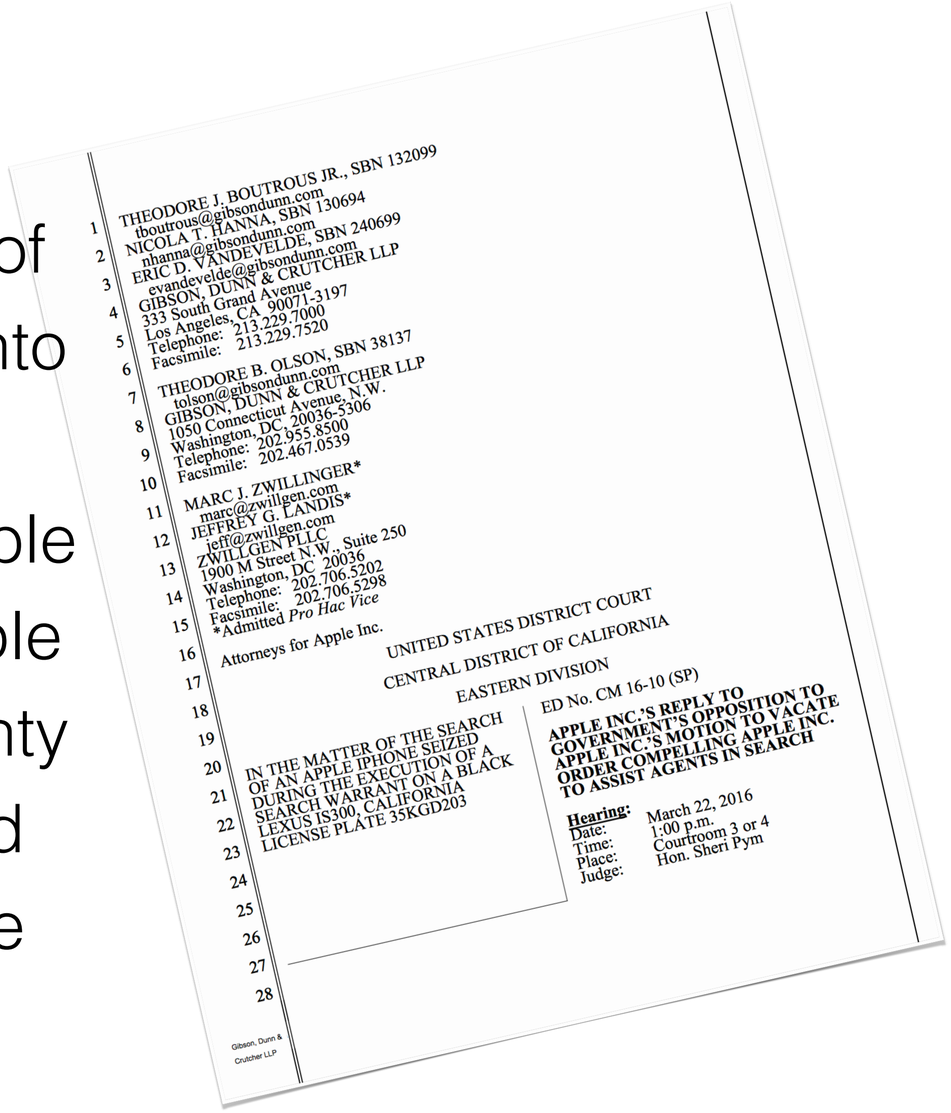
- After working with the FBI for weeks on all possible technical means to access the iPhone data, Apple refused the FBI order, and the case went to county
- The court sided with Apple, but the DOJ pressed on, and the case looked like it was headed to the Supremes



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MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

This is not a case about one isolated iPhone. Rather, this case is about the Department of Justice and the FBI seeking through the courts a dangerous power that Congress and the American people have withheld: the ability to force companies like Apple to undermine the basic security and privacy interests of hundreds of millions of individuals around the globe. The government demands that Apple create a back door to defeat the encryption on the iPhone, making its users' most confidential and personal information vulnerable to hackers, identity thieves, hostile foreign agents, and unwarranted government surveillance. The All Writs Act, first enacted in 1789 and on which the government bases its entire case, "does not give the district court a roving commission" to conscript and commandeer Apple in this manner. *Plum Creek Lumber Co. v. Hutton*, 608 F.2d 1283, 1289 (9th Cir. 1979). In fact, no court has ever authorized what the government now seeks, no law supports such unlimited and sweeping use of the judicial process, and the Constitution forbids it.

source: ED No. CM 16-10 (SP), IN THE MATTER OF THE SEARCH OF AN APPLE IPHONE SEIZED DURING THE EXECUTION OF A SEARCH WARRANT ON A BLACK LEXUS IS300, CALIFORNIA LICENSE PLATE 35KGD203

What does the NSA spend $60-billion a year on if they can’t crack open an iPhone?

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Richard Clarke, former Special Advisor to the President on Cybersecurity in the George H.W. Bush administration, speaking to host David Green on NPR's Morning Edition, *on* ***Tuesday, March 15, 2016***.

Coincidence?

techcrunch.com

TC News Startups Mobile Gadgets Enterprise Social Trending Apple Facebook Google

Mobile Apple Apple vs. FBI FBI

FBI says it might not need Apple's help unlocking that iPhone after all, asks to postpone hearing (UPDATE: Postponed!)

Posted yesterday by Greg Kumparak (@grg), Matthew Panzarino (@panzer)

803 SHARES

Next Story

source: TechCrunch,
March 20, 2016

Perjury?

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Attorneys for Applicant
UNITED STATES OF AMERICA

UNITED STATES DISTRICT COURT

FOR THE CENTRAL DISTRICT OF CALIFORNIA

IN THE MATTER OF THE SEARCH OF AN APPLE IPHONE SEIZED DURING THE EXECUTION OF A SEARCH WARRANT ON A BLACK LEXUS IS300, CALIFORNIA LICENSE PLATE 35KGD203	ED No. 15-0451M GOVERNMENT'S *EX PARTE* APPLICATION FOR ORDER COMPELLING APPLE INC. TO ASSIST AGENTS IN SEARCH; MEMORANDUM OF POINTS AND AUTHORITIES; DECLARATION OF CHRISTOPHER PLUHAR; EXHIBIT

Perjury?

MEMORANDUM OF POINTS AND AUTHORITIES

I. INTRODUCTION

In the hopes of gaining crucial evidence about the December 2, 2015 massacre in San Bernardino, California, the government has sought to search a lawfully-seized Apple iPhone used by one of the mass murderers. Despite both a warrant authorizing the search and the phone owner's consent, the government has been unable to complete the search because it cannot access the iPhone's encrypted content. Apple has the exclusive technical means which would assist the government in completing its search, but has declined to provide that assistance voluntarily. Accordingly, the government respectfully requests that this Court issue an order compelling Apple to assist in enabling the search commanded by the warrant.

II. FACTUAL BACKGROUND

Perjury?

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II. FACTUAL BACKGROUND

FBI Smartphone Security Recommendations

Safety tips to protect your mobile device:

- When purchasing a smartphone, know the features of the device, including the default settings. Turn off features of the device not needed to minimize the attack surface of the device.
- Depending on the type of phone, the operating system may have encryption available. This can be used to protect the user's personal data in the case of loss or theft.
- With the growth of the application market for mobile devices, users should look at the reviews of the developer/company who published the application.
- Review and understand the permissions you are giving when you download applications.
- Passcode protect your mobile device. This is the first layer of physical security to protect the contents of the device. In conjunction with the passcode, enable the screen lock feature after a few minutes of inactivity.
- Obtain malware protection for your mobile device. Look for applications that specialize in antivirus or file integrity that helps protect your device from rogue applications and malware.

source: **fbi.gov** (6/2015)
Since removed

National Security

Powerful NSA hacking tools have been revealed online

Strings of code were released to the Internet by a group calling themselves "the Shadow Brokers". They claim the code is a tool that can be used to hack into any computer. (Jhaan Elker/The Washington Post)

By Ellen Nakashima August 16

Some of the most powerful espionage tools created by the National Security Agency's elite group of hackers have been revealed in recent days, a development that could pose severe consequences for the spy agency's operations and the security of government and corporate computers.

source:
Washington Post, 8/16/16

Kaspersky Confirmed: Leaked Hacking Tools Belong to NSA-tied Group

According to a technical report published Tuesday by security firm Kaspersky Lab, the leaked advanced hacking tools contains digital signatures that are identical to those in hacking software and malware previously used by the Equation Group.

> "While we cannot surmise the attacker's identity or motivation nor where or how this pilfered trove came to be, we can state that several hundred tools from the leak share a strong connection with our previous findings from the Equation group," Kaspersky researchers said in a blog post.

Over 300 computer files found in the Shadow Brokers archive have a common implementation of RC5 and RC6 encryption algorithms – which has been used extensively by the Equation Group.

Also, the implementation of encryption algorithms is identical to the RC5 and RC6 code in the Equation Group malware.

"There are more than 300 files in the Shadow Brokers' archive which implement this specific variation of RC6 in 24 other forms," the researcher wrote. *"The*

source:
Ars Technica, 8/22/16

chances of all these being fakes or engineered is highly unlikely."

> "The code similarity makes us believe with a high degree of confidence that the tools from the Shadow Brokers' leak are related to the malware from the Equation group."

Here's the comparison of the older Equation RC6 code and the code from the new leak, which shows that they have identical functionally and share rare specific traits in their implementation:

Old Equation group malware code	Code from Shadowbrokers' leak

`*(_DWORD *)buf = 0xB7E15163;`
`i = 1;`
 	
`do`
`{`
`*(_DWORD *)(buf + 4 * i) =`
`*(_DWORD *)(buf + 4 * i - 4) -`
`0x61C88647;`
`++i;`
`}`
 	
`while ( i < 44 );`
	`i = 1;`
	`*(_DWORD *)buf = 0xB7E15163;`
	
	`do`
	`{`
	`*(_DWORD *)(buf + 4 * i) =`
	`*(_DWORD *)(buf + 4 * i - 4) -`
	`0x61C88647;`
	`++i;`
	`}`
	
	`while ( i <= 43 );`

source:
Ars Technica, 8/22/16

Edward Snowden: Russia probably behind NSA leak

By Kevin Rawlinson BBC News

Getty Images

Edward Snowden said he believed Russia to be behind the leak

The whistleblower Edward Snowden believes Russia is behind a leak of malware allegedly belonging to the US National Security Agency (NSA).

Hackers calling themselves Shadow Brokers started an auction for the malware last week.

The security firm Kaspersky said it believed the original files were from Equation Group, which is thought to be linked to the NSA.

A former NSA worker Dave Aitel pointed the finger at Russian involvement.

He said it was likely to be a diplomatic strategy, related to the blame being placed on Russia for a recently revealed hack of computers belonging to the Democratic party in the US.

Mr Snowden tweeted on Tuesday: "This leak is likely a warning that someone can prove US responsibility for any attacks that originated from this malware server."

'Malware'

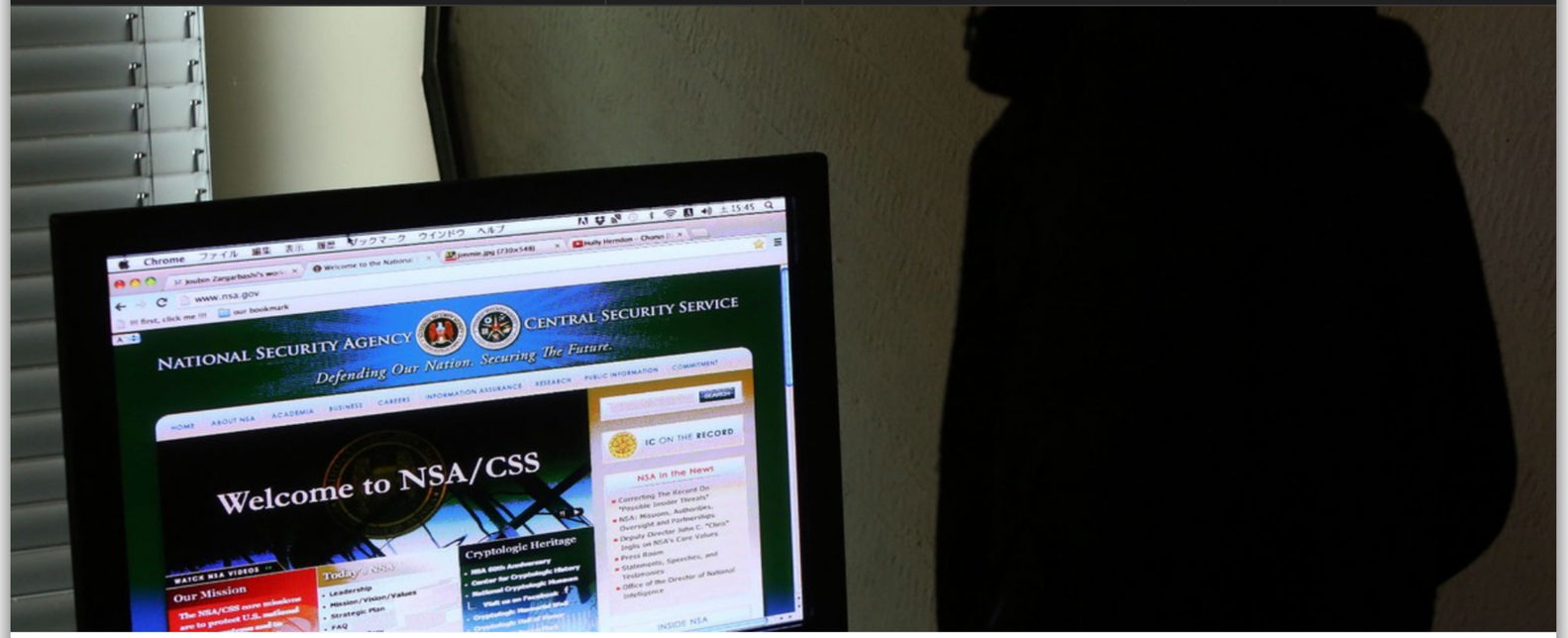
Kaspersky has released analysis that led it to believe "with a high degree of confidence that the tools from the Shadow Brokers leak are related to the malware from the Equation group".

It said that elements of a sample released by the hackers for verification displayed characteristics thought to be unique to Equation.

Equation is reported to have links to the NSA.

source:
BBC News, 8/21/16

MOTHERBOARD Watch Sections



Former NSA Staffers: Rogue Insider Could Be Behind NSA Data Dump

Written by **LORENZO FRANCESCHI-BICCHIERAI AND JOSEPH COX**

August 17, 2016 // 04:50 PM EST

There are a lot of unanswered questions surrounding the shocking dump of a slew of hacking tools used by an NSA-linked group earlier this week. But perhaps the biggest one is: who's behind the leak? Who is behind the mysterious moniker "The Shadow Brokers"?

source:
Vice Motherboard, 8/17/16
Ars Technica, 8/22/16

MOTHERBOARD Watch Sections

"This 'Shadow Brokers' character is one guy, an insider employee."

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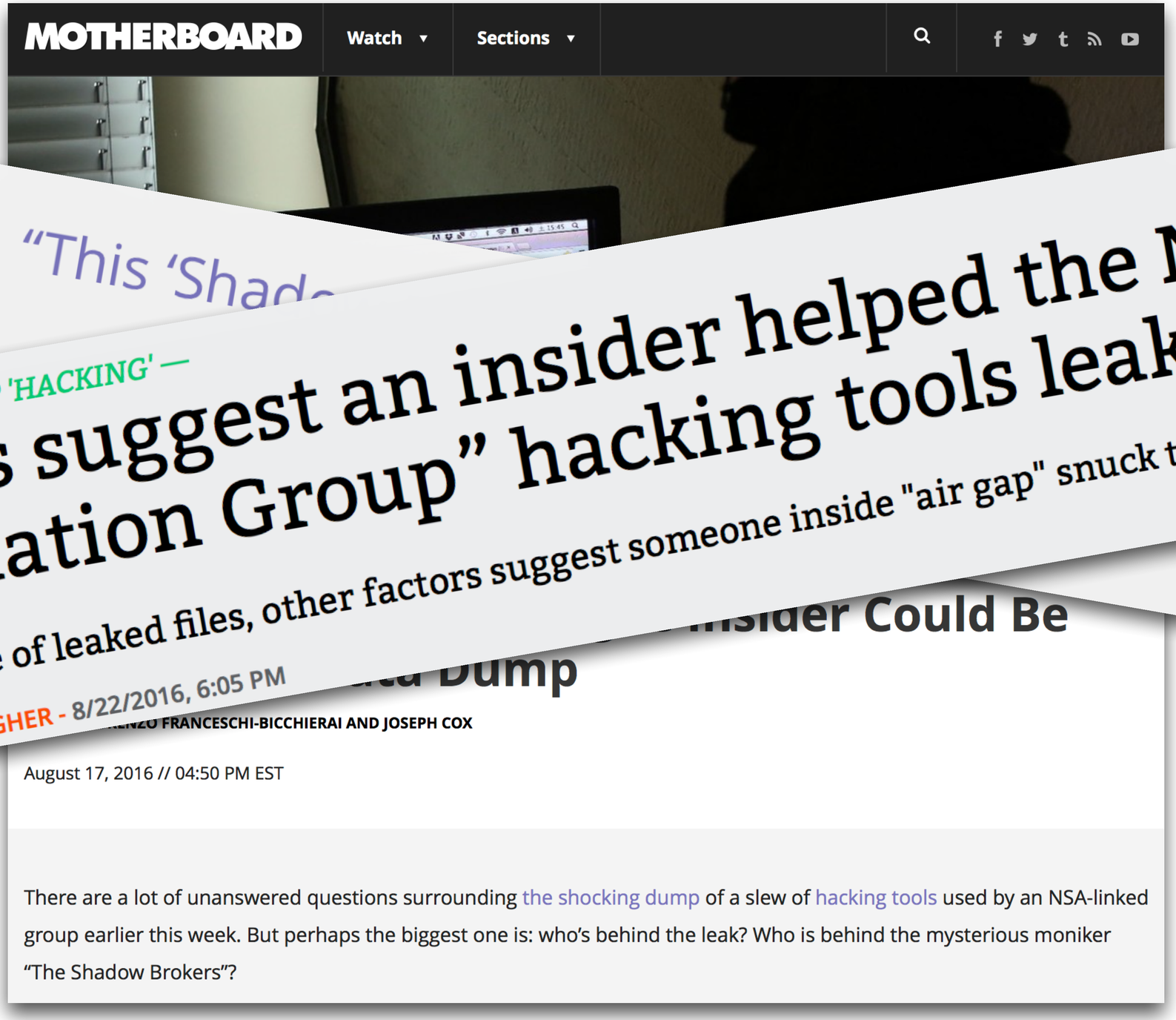

source:
Vice Motherboard, 8/17/16
Ars Technica, 8/22/16

Privacy Advocates Cite NSA Hack as Vindication of Apple's Fight With FBI

Monday August 22, 2016 2:37 am PDT by Tim Hardwick

Privacy advocates have claimed the breach of hacking tools and exploits apparently stolen from the National Security Agency has vindicated Apple's stance in its dispute with the FBI earlier this year.

Last week, reports emerged that a hacker group called the "Shadow Brokers" had allegedly stolen a cache of the NSA's top espionage tools and offered to sell them to the highest bidder.

The malware was linked to the "Equation Group", a secretive team of cyber spies widely believed to be associated with the NSA and its state partners. The hacking collective that stole the malware posted two sets of files online, including a free sample of the stolen data, which dates back to 2013, and a second encrypted file whose decryption key went up for sale in a bitcoin auction. Many saw the auction as a stunt.

But the attack code posted by the hackers appeared to be real, according to former NSA personnel who worked in the agency's hacking division, known as Tailored Access Operations (TAO).

"Without a doubt, they're the keys to the kingdom," said one former TAO employee, who spoke to *The Washington Post* on the condition of anonymity to discuss sensitive internal operations. "The stuff you're talking about would undermine the security of a lot of major government and corporate networks both here and abroad."

"It's a big deal," said Dave Aitel, an ex-NSA research scientist and CEO of penetration testing firm Immunity. "We'd be panicking." Whistle-blowing website Wikileaks tweeted that it also had the data and would release it "in due course".

News of the leak has been closely followed by technology companies, many of whom pushed back against the U.S. Senate Intelligence Committee's attempts to force them to provide "technical assistance" to government investigators seeking locked data.

The failed attempt to enact legislation came after Apple publicly clashed with the FBI over the government agency's insistence that it create a "back door" to its iPhone software.

source:
MacRumors.com, 8/22/16

“If we’re forced to create a backdoor into the iPhone for the government, it will be used for bad things.”

“If we’re forced to create a backdoor into the iPhone for the government, it will be used for bad things.”

– Apple, back in March

“Nonsense!

We’ll only use it once, on this one phone, this one time, and never ever again, ever!

And no one else will ever get hold of it! We promise!”

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“We just published the NSA’s hacking tools.”

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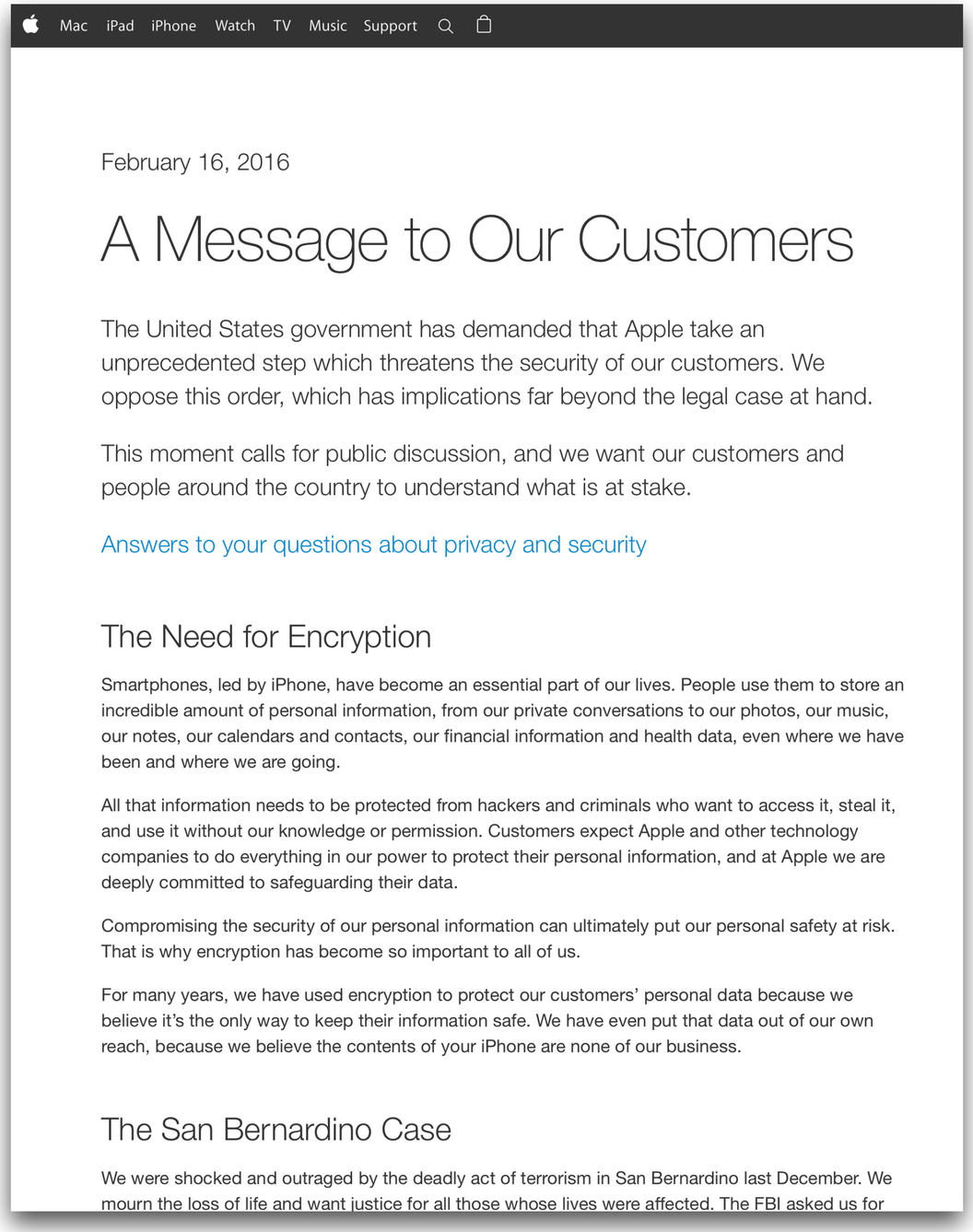
– The Russians, probably, last week.



apple.com/customer-letter

The implications of the government's demands are chilling. If the government can use the All Writs Act to make it easier to unlock your iPhone, it would have the power to reach into anyone's device to capture their data. The government could extend this breach of privacy and demand that Apple build surveillance software to intercept your messages, access your health records or financial data, track your location, or even access your phone's microphone or camera without your knowledge.

Opposing this order is not something we take lightly. We feel we must speak up in the face of what we see as an overreach by the U.S. government.

We are challenging the FBI's demands with the deepest respect for American democracy and a love of our country. We believe it would be in the best interest of everyone to step back and consider the implications.

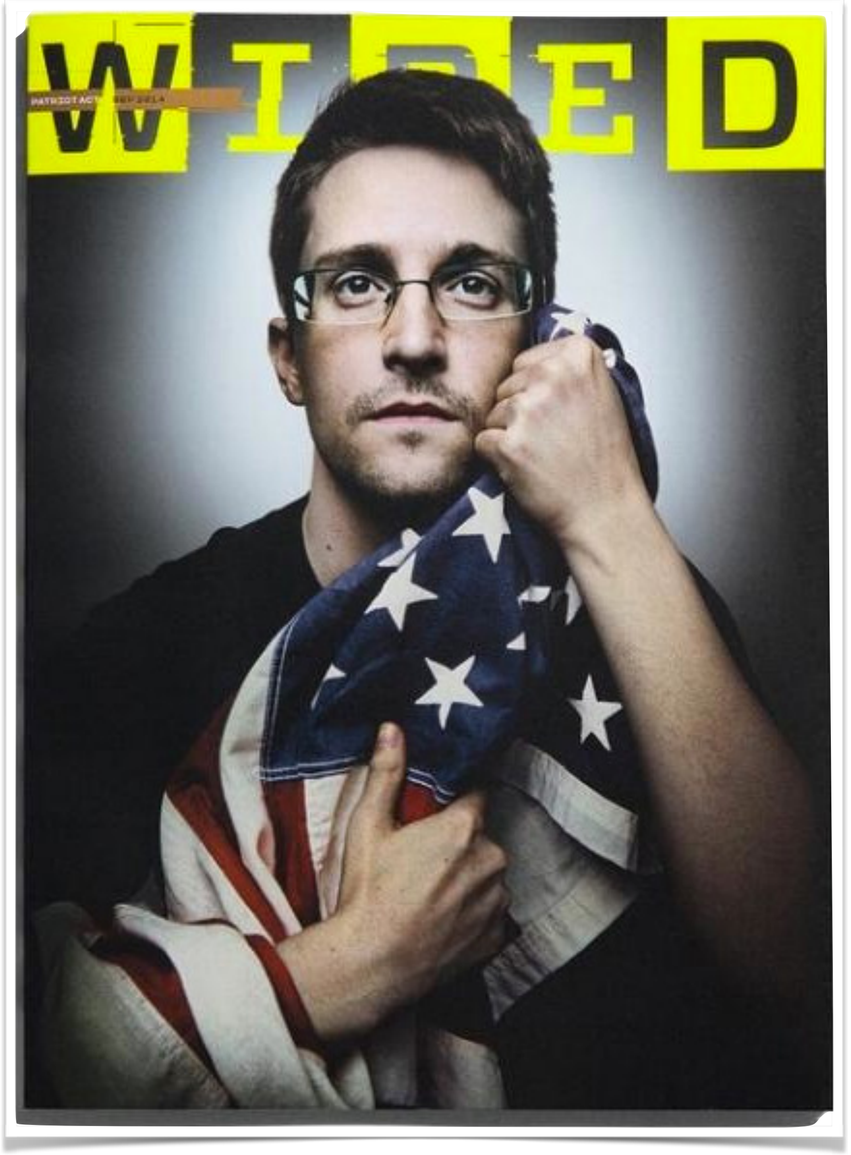
“If I am a traitor, then who did I betray?

I gave all my information to the American public, to American journalists who are reporting on American issues.

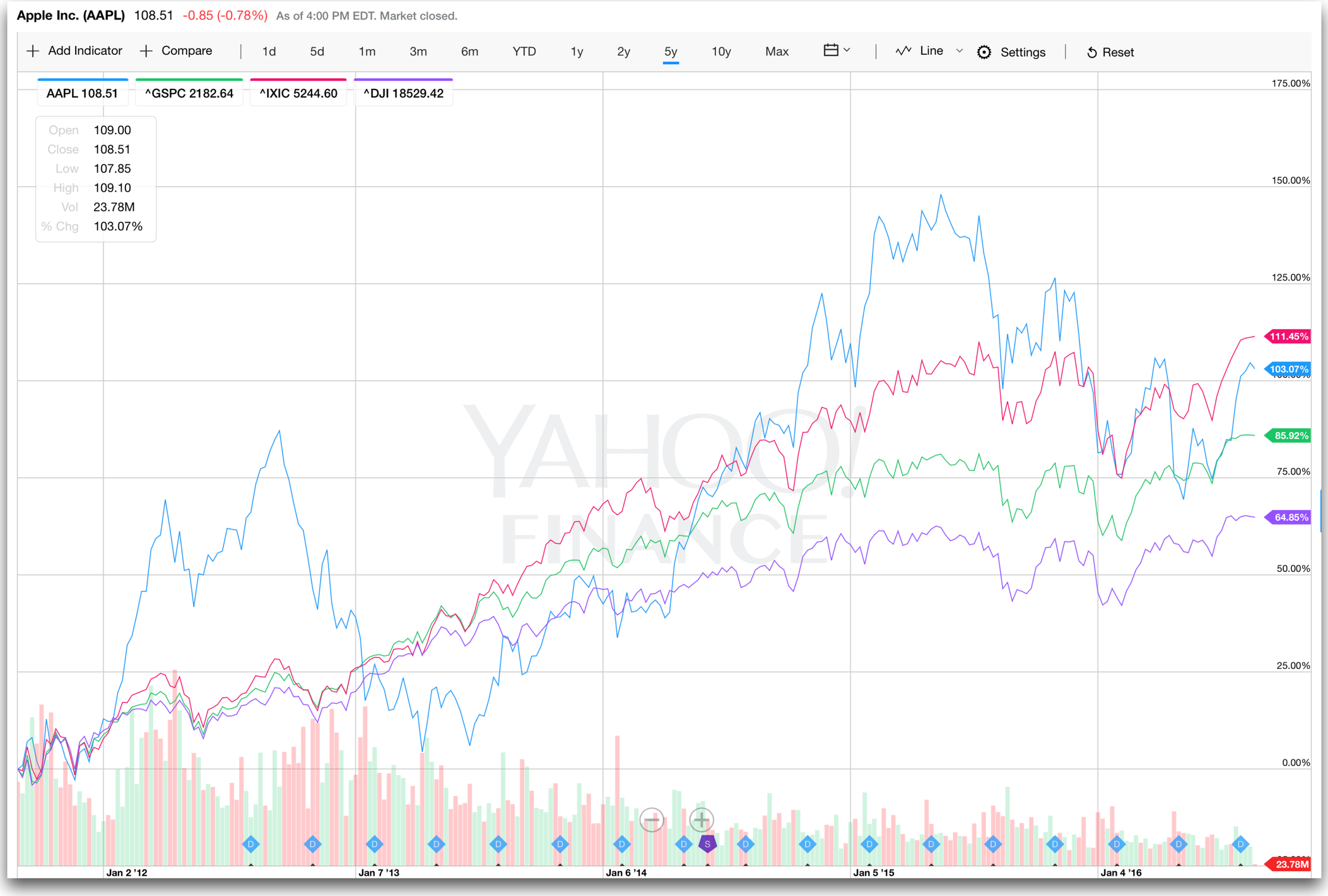
If you they see that as treason, I think people really need to consider who they think they’re working for.

The public is supposed to be their boss, not their enemy.”

– Edward Snowden



Apple’s First Five Years with Tim Cook as CEO


Apple Inc. (AAPL) 108.51 -0.85 (-0.78%) As of 4:00 PM EDT. Market closed.
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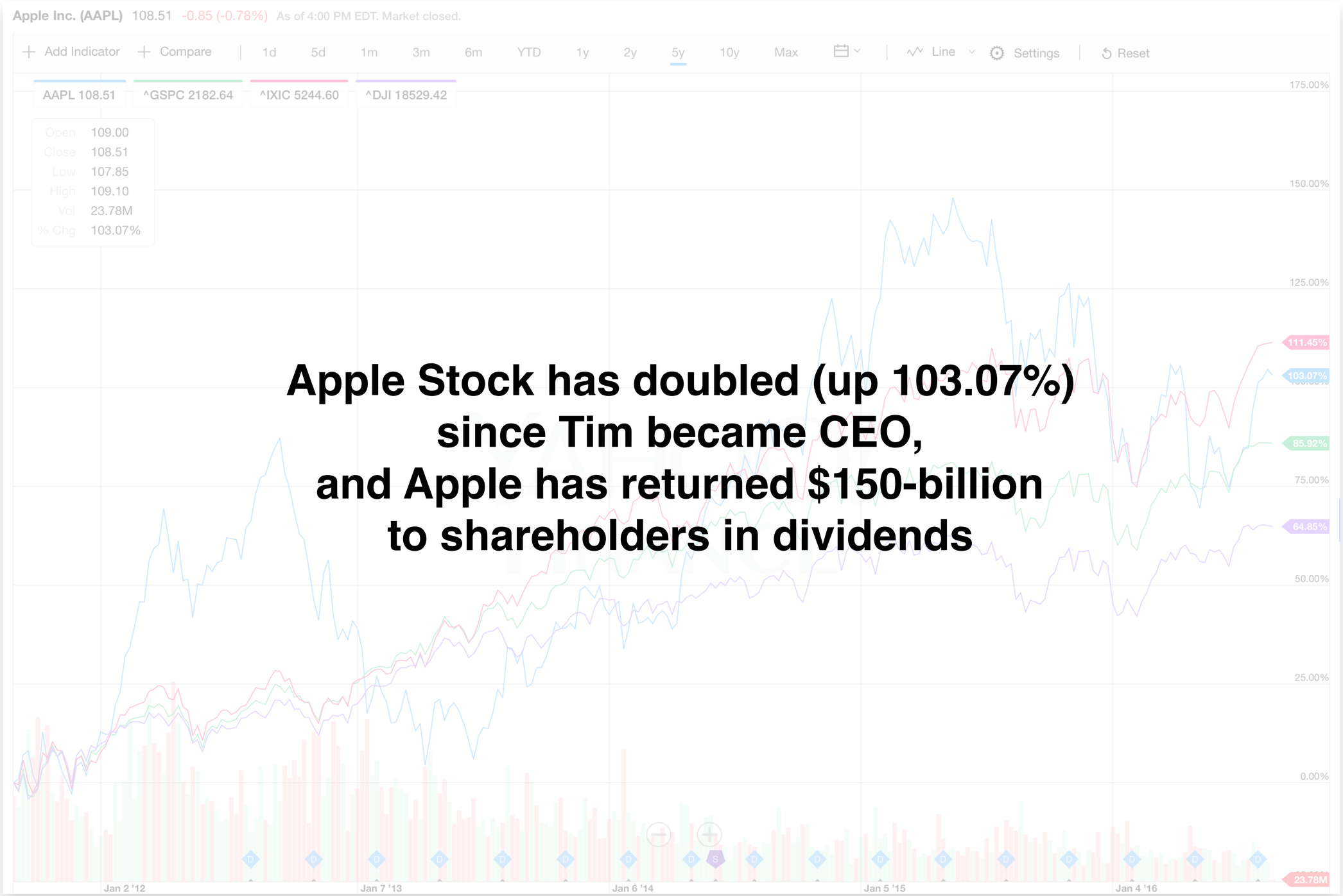
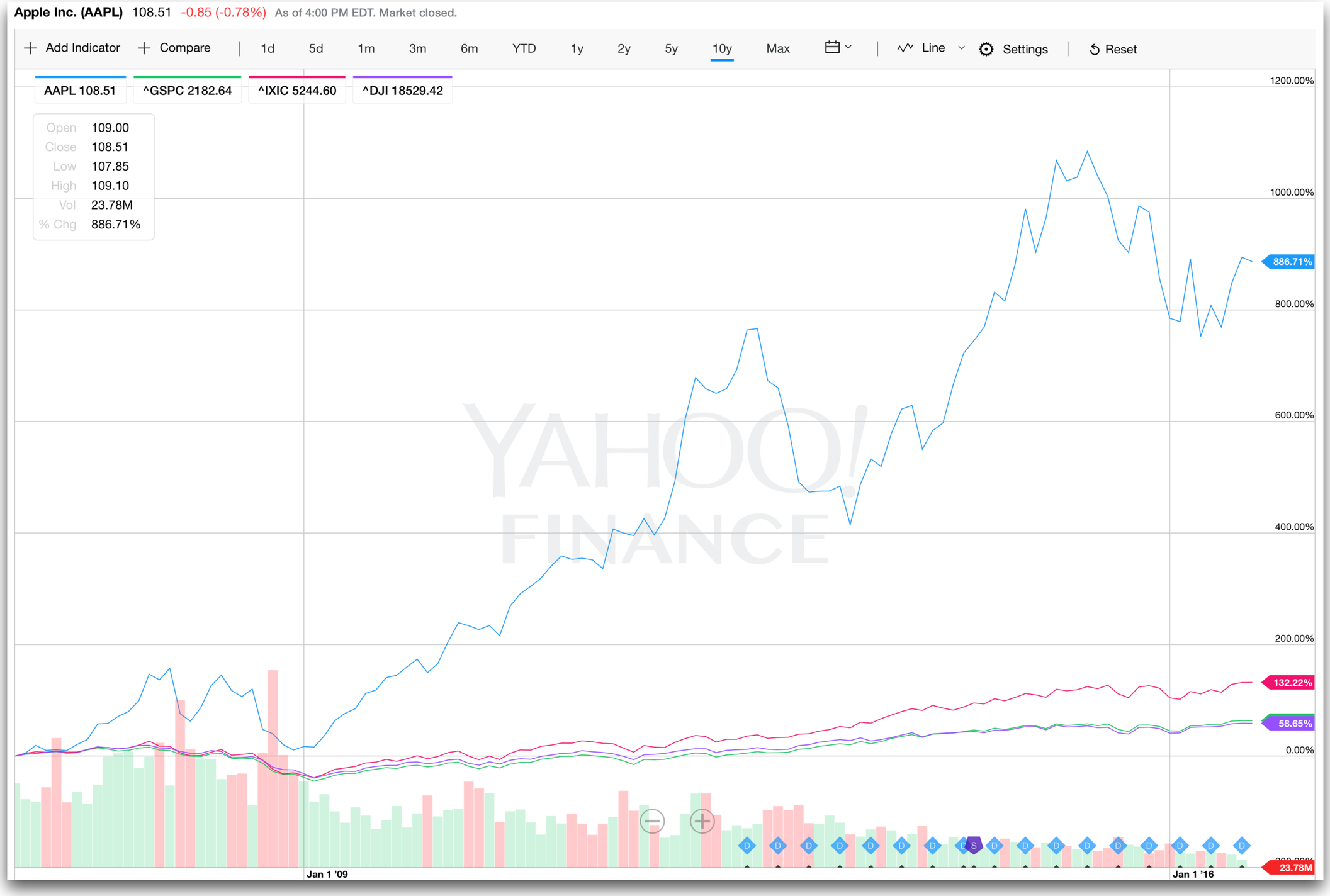
Jan 4 '16
YAHOO! FINANCE


Apple Inc. (AAPL) 108.51 -0.85 (-0.78%) As of 4:00 PM EDT. Market closed.
Add Indicator
Compare
1d
5d
1m
3m
6m
YTD
1y
2y
5y
10y
Max
Line
Settings
Reset
AAPL 108.51
^GSPC 2182.64
^IXIC 5244.60
^DJI 18529.42
Open 109.00
Close 108.51
Low 107.85
High 109.10
Vol 23.78M
% Chg 103.07%
175.00%
150.00%
125.00%
111.45%
103.07%
85.92%
75.00%
64.85%
50.00%
25.00%
0.00%
23.78M
Jan 2 '12
Jan 7 '13
Jan 6 '14
Jan 5 '15
Jan 4 '16
Apple Stock has doubled (up 103.07%)
since Tim became CEO,
and Apple has returned $150-billion
to shareholders in dividends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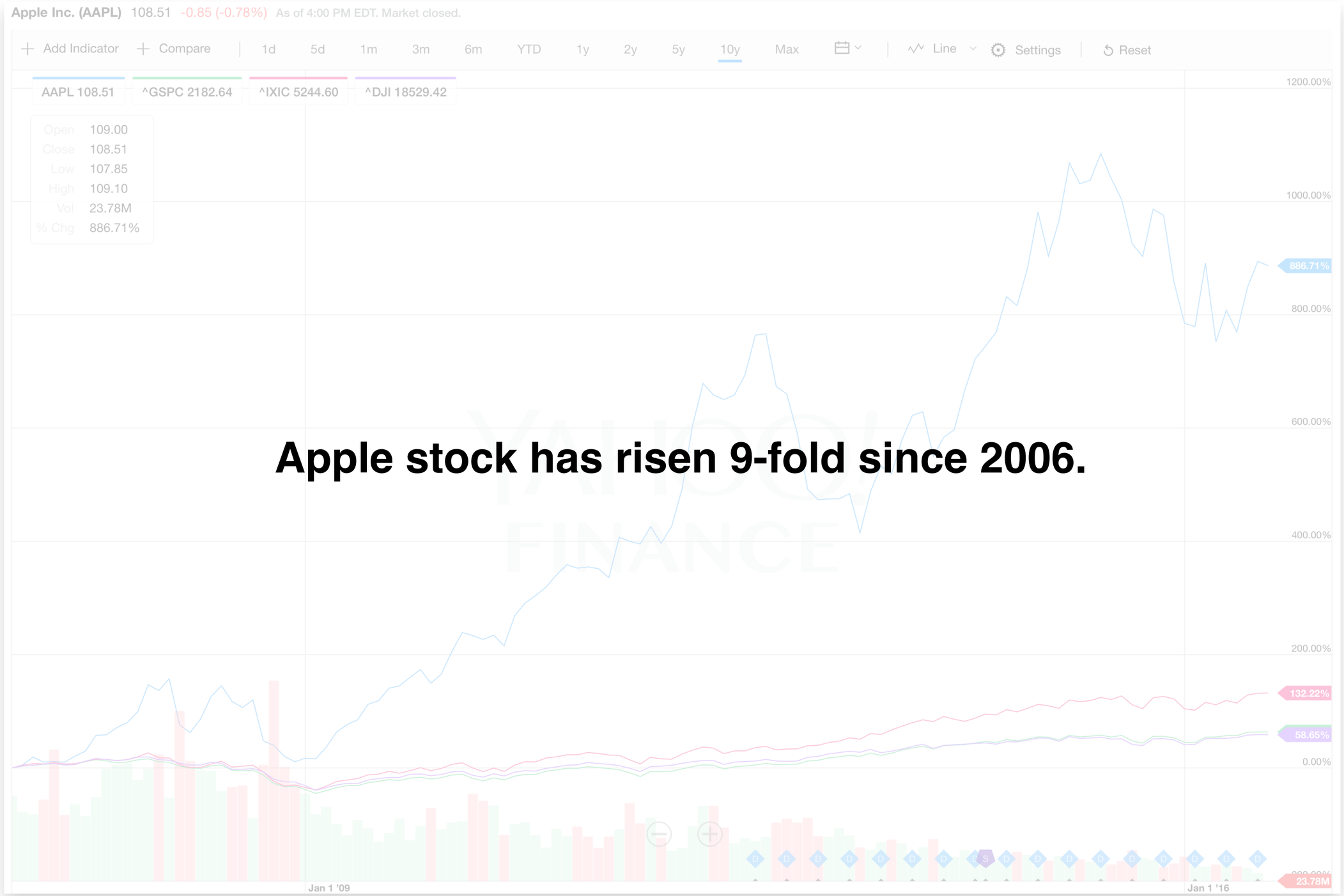
Open 109.00
Close 108.51
Low 107.85
High 109.10
Vol 23.78M
% Chg 886.71%
1200.00%
1000.00%
800.00%
600.00%
400.00%
200.00%
0.00%
886.71%
132.22%
58.65%
23.78M
Jan 1 '09
Jan 1 '16
YAHOO! FINANCE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600.00%
400.00%
200.00%
132.22%
58.65%
0.00%
23.78M
Jan 1 '09
Jan 1 '16
Apple stock has risen 9-fold since 2006.

A Trip Down Memory Lane

40 Years of Memory/Memories

40 Years of Memory/Memories

- Yours Truly stumbled into the “personal computer industry” in 1977

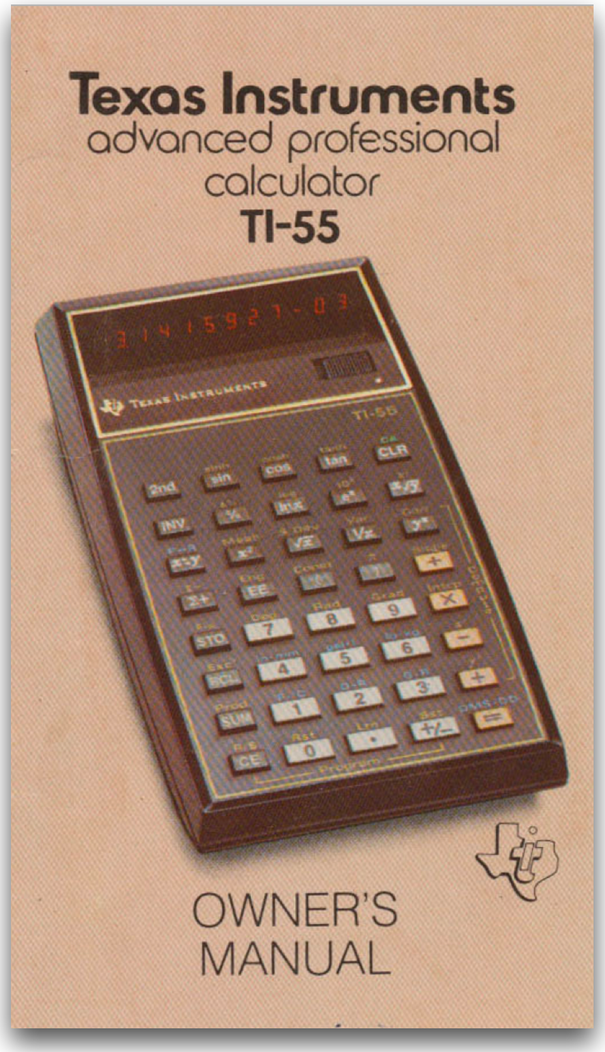
40 Years of Memory/Memories

- Yours Truly stumbled into the “personal computer industry” in 1977
- Things were just starting to get interesting

40 Years of Memory/Memories

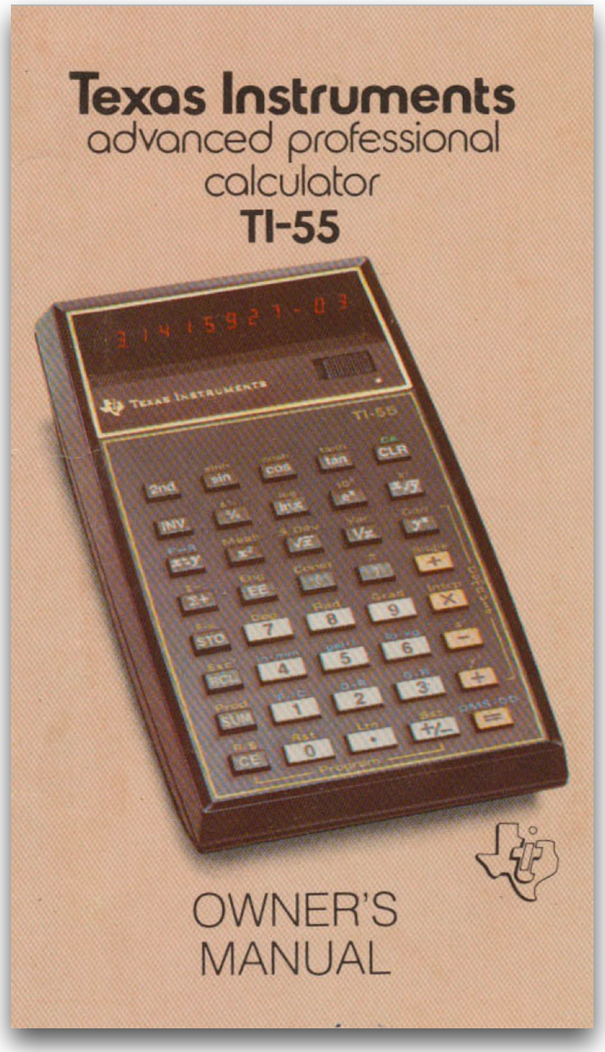
- Yours Truly stumbled into the “personal computer industry” in 1977
- Things were just starting to get interesting
- Who’d a thunk?

1977: TI-55 Programmable Calculator



1977: TI-55 Programmable Calculator

- First mass-market programmable “pocket” calculator



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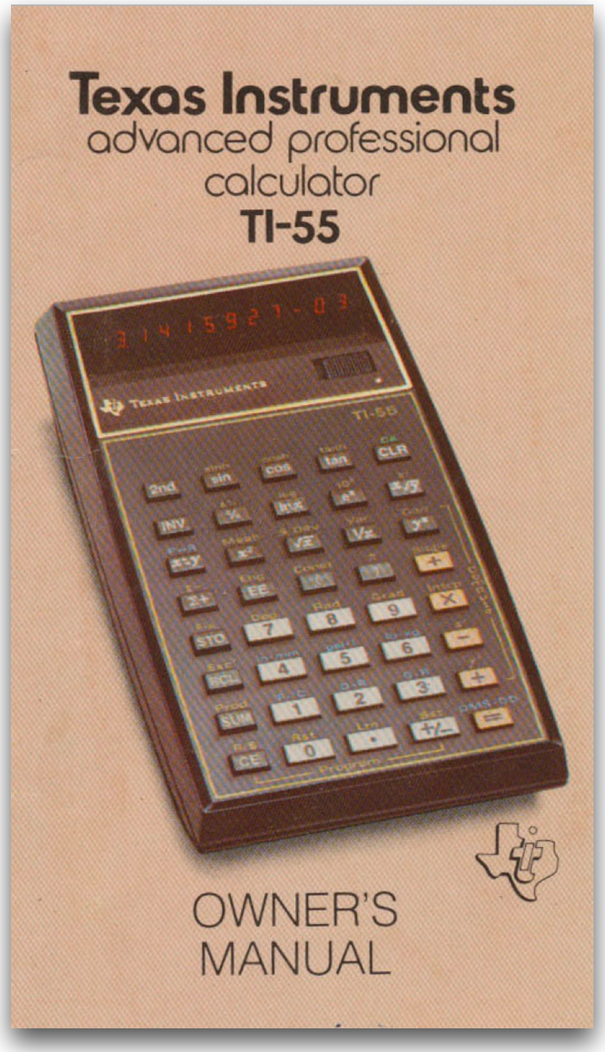
- First mass-market programmable “pocket” calculator
- 32-step memory (32 bytes)



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- First mass-market programmable “pocket” calculator
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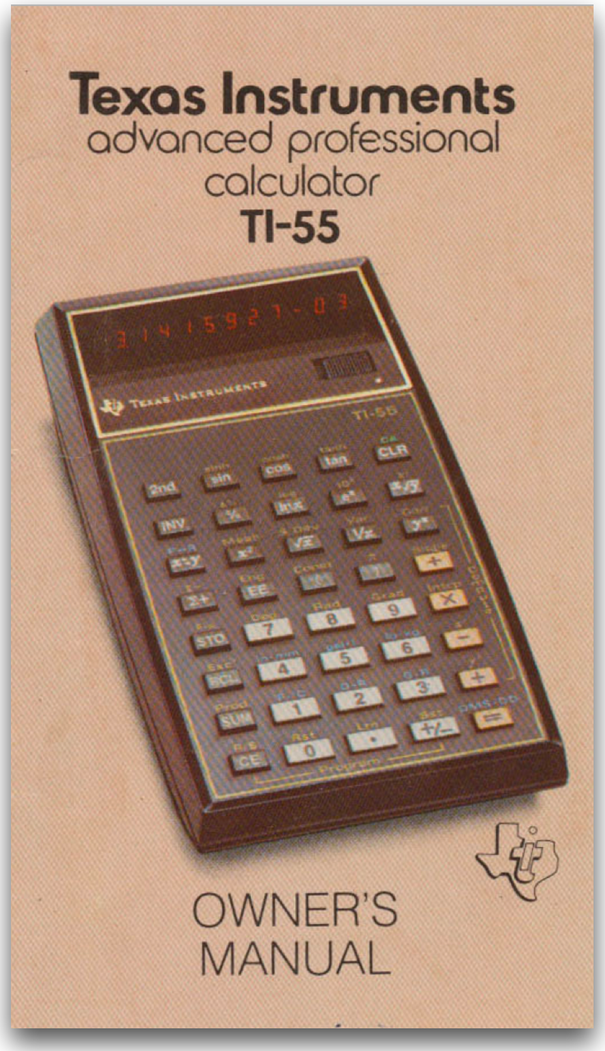
- 26 scientific and algebraic functions



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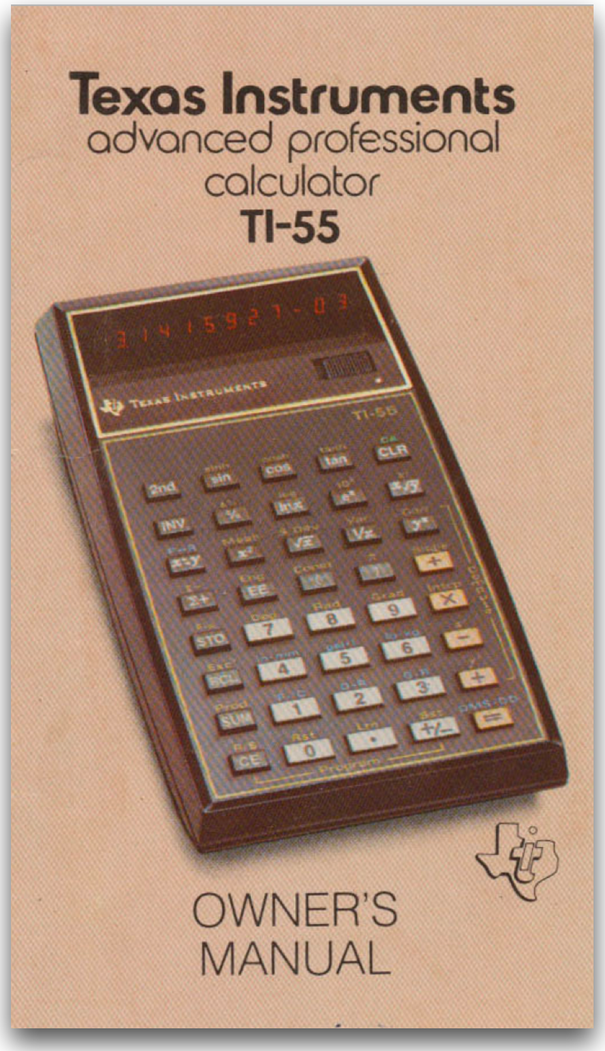
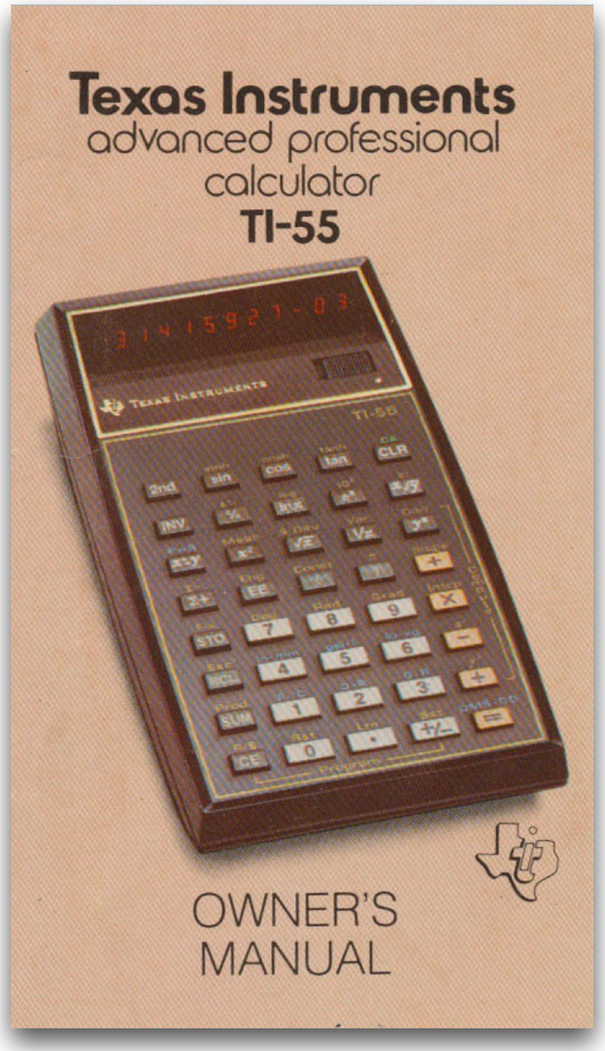
- $129



1977: TI-55 Programmable Calculator

- First mass-market programmable “pocket” calculator
- 32-step memory (32 bytes)
- 26 scientific and algebraic functions
- $129
- This is what started it all for me/us



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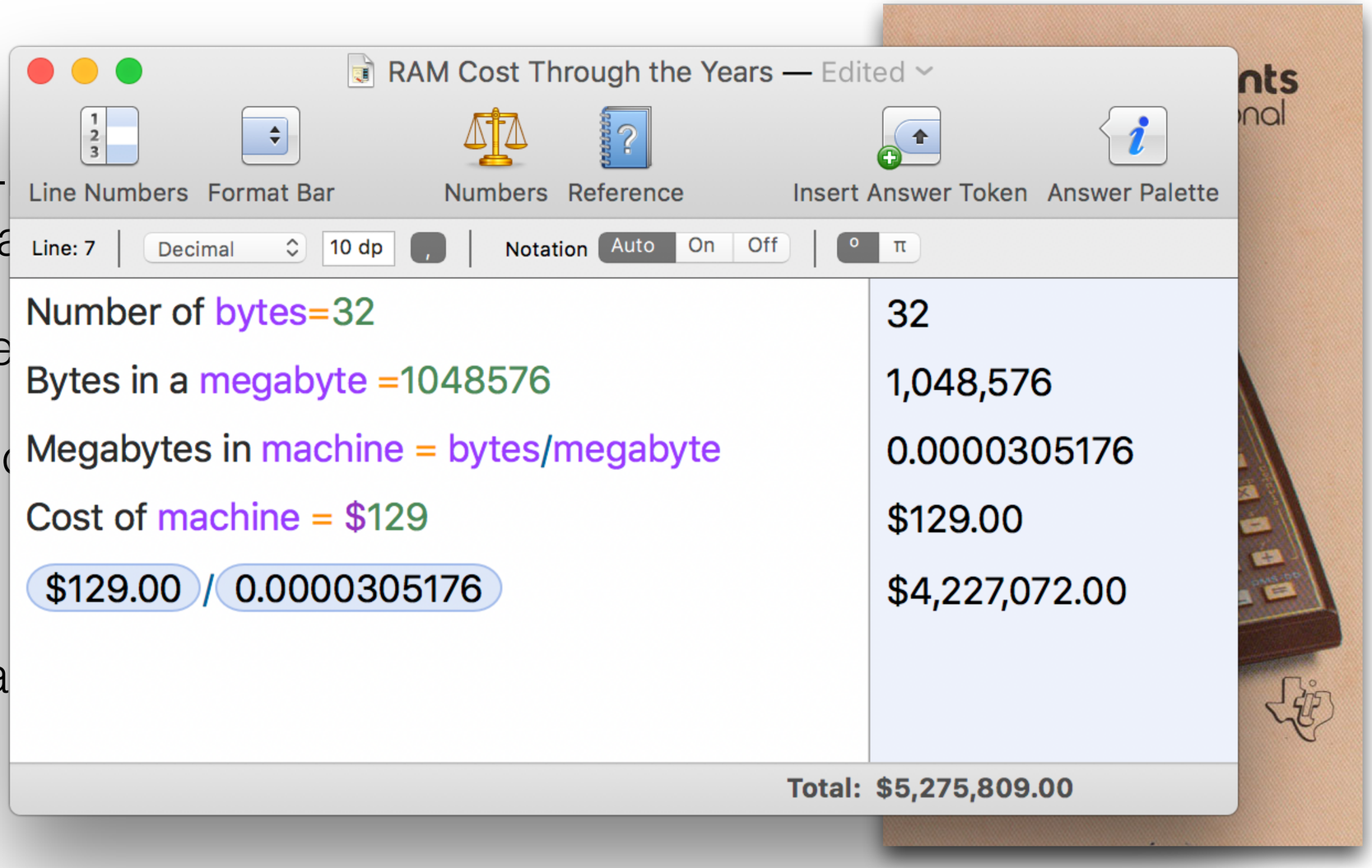
- This is wha



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- 4k of RAM, no permanent storage
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- $190 “Level II Upgrade” brought it to 16k and added cassette storage!

1977: Radio Shack TRS-80, Level I

- First mass-
- 4k of RAM,
- $499
- $190 “Leve
  to 16k and

RAM Cost Through the Years

Line Numbers | Format Bar | Numbers | Reference | Insert Answer Token | Answer Palette

Line: 7 | Decimal | 10 dp | , | Notation | Auto | On | Off | ° | π

Number of bytes=16384	16,384
Bytes in a megabyte =1048576	1,048,576
Megabytes in machine = bytes/megabyte	0.015625
Cost of machine = $499 + $190	$689.00
$689.00 / 0.015625	$44,096.00

Total: $1,109,745.02

1977: Radio Shack TRS-80, Level I

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The price of RAM in a consumer-grade device dropped from $4.2-million to $44,000 in less than a year!

That’s a 98.96% drop!

1978: Apple][Plus 48k

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- Apple’s first huge-volume product

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- Apple’s first huge-volume product
- 48k RAM + cassette storage

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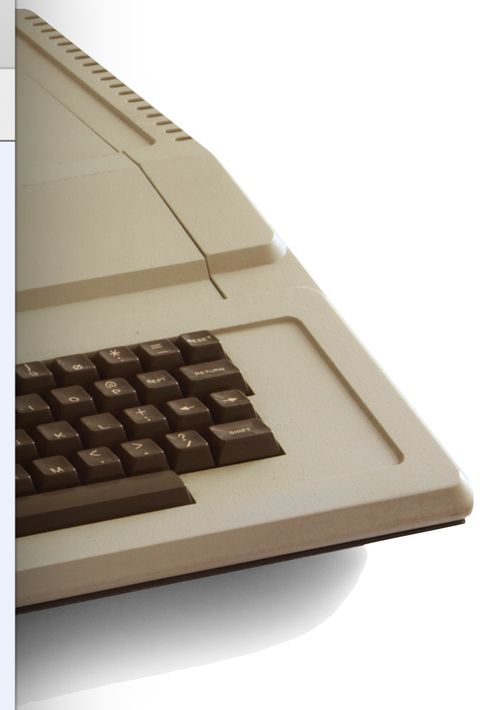
RAM Cost Through the Years

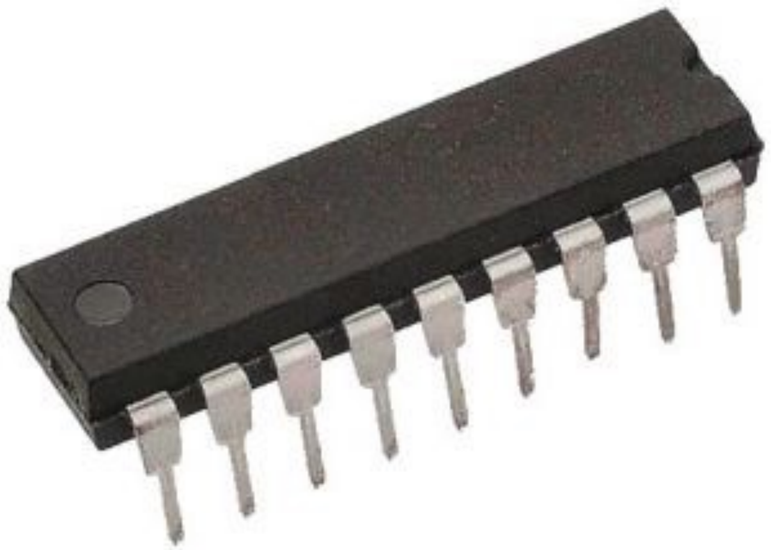
Line Numbers | Format Bar | Numbers | Reference | Insert Answer Token | Answer Palette

Line: 7 | Decimal | 10 dp | , | Notation | Auto | On | Off | ° | π

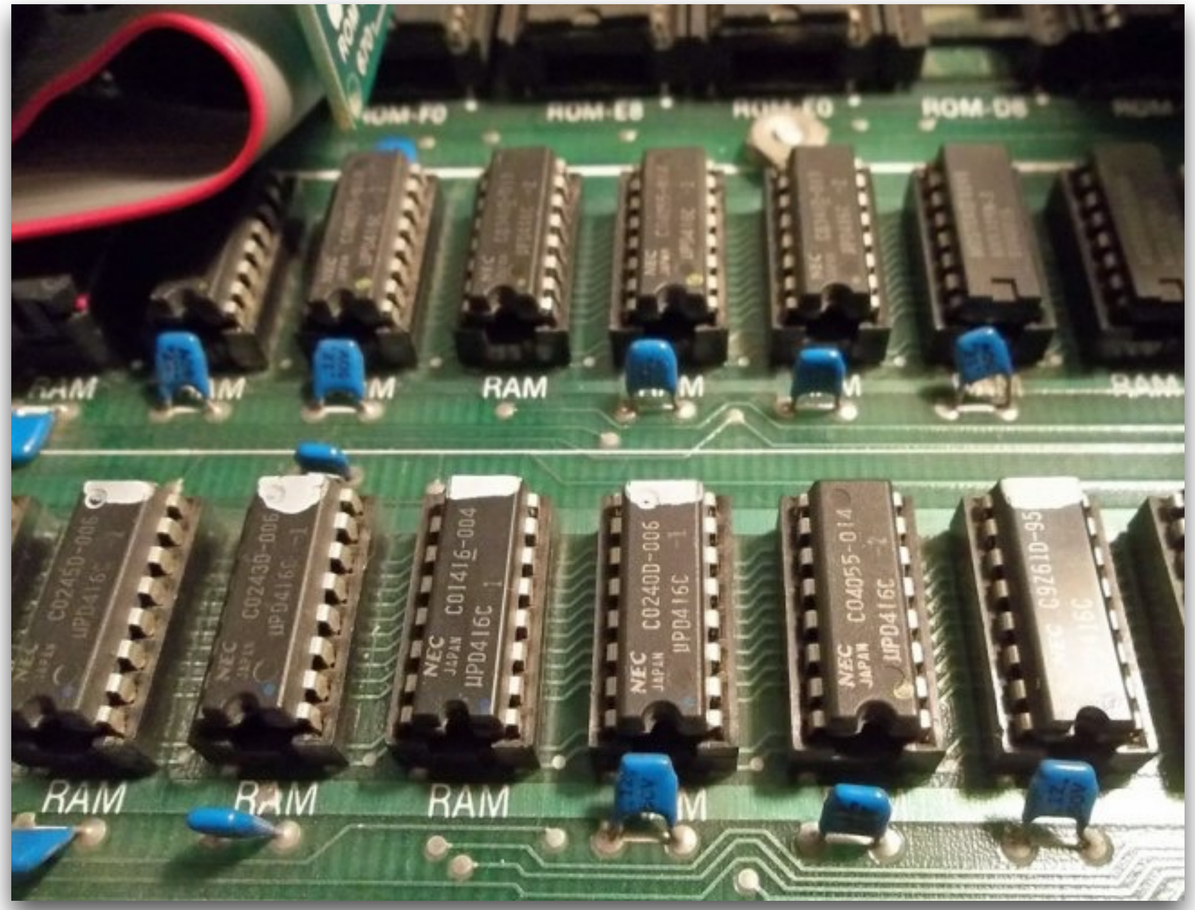
Number of bytes=49152	49,152
Bytes in a megabyte =1048576	1,048,576
Megabytes in machine = bytes/megabyte	0.046875
Cost of machine = $1998	$1,998.00
$1,998.00 / 0.046875	$42,624.00

Total: $1,142,350.05





16k x 1-bit DRAM Chip
circa 1980
8 of these gave you 16kB of RAM



1982: Victor 9000 PC

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- One of the best of the huge wave of pre-Windows Intel-based PCs

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- As shown with two 640kb floppy drives sold for $4,950

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- 128k RAM system with no floppy drives sold for $2,500
- As shown with two 640kb floppy drives sold for $4,950
- **Optional 10Mb hard drive sold for $4,495**

1982: Victor 9000 PC

1982: Victor 9000 PC

RAM Cost Through the Years — Edited

Line Numbers | Format Bar | Numbers | Reference | Insert Answer Token | Answer Palette

Line: 7 | Decimal | 10 dp | , | Notation | Auto | On | Off | º | π

Number of bytes=10240000	10,240,000
Bytes in a megabyte =1048576	1,048,576
Megabytes in machine = bytes/megabyte	9.765625
Cost of machine = $4495	$4,495.00
$4,495.00 / 9.765625	$460.29

Total: $11,293,541.05

1984: IBM PC-AT

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- IBM’s first million-selling PC

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- IBM’s first million-selling PC
- 16-bit Intel 80286 CPU, 512k RAM, 1.2Mb FDD
- Almost always sold with 10Mb or 20Mb HD
- System with 20Mb HD $5,295

1984: IBM PC-AT

- IBM's first r
- 16-bit Intel
- Almost alwa
- System with

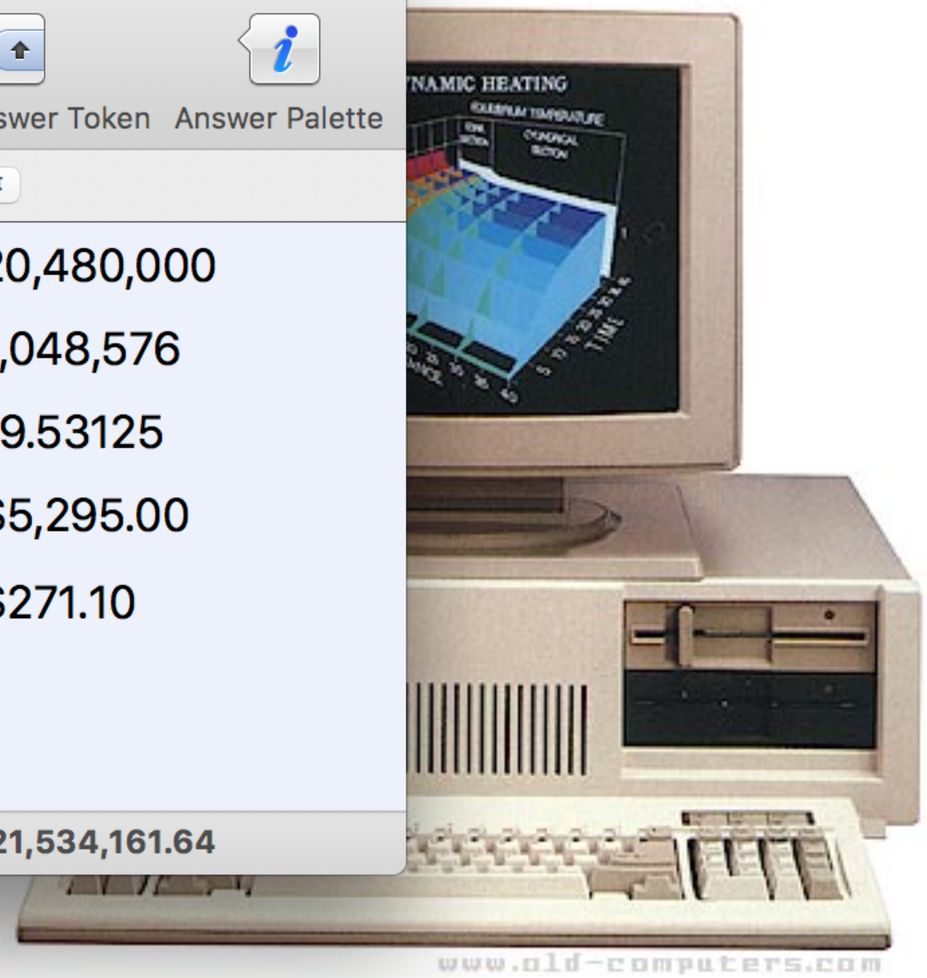
RAM Cost Through the Years

Line Numbers | Format Bar | Numbers | Reference | Insert Answer Token | Answer Palette

Line: 7 | Decimal | 10 dp | , | Notation | Auto | On | Off | ° | π

Number of bytes=20480000	20,480,000
Bytes in a megabyte =1048576	1,048,576
Megabytes in machine = bytes/megabyte	19.53125
Cost of machine = $5295	$5,295.00
$5,295.00 / 19.53125	$271.10

Total: $21,534,161.64



1984: IBM PC-AT

The HD storage doubled,
and you got a whole system for what
you paid for just the HD two years earlier!

1994: Epson NB-SL/25

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- An astonishing achievement in miniaturization & performance at the time

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- Intel 386SL CPU, 4Mb RAM, internal 3.5” FDD, 80Mb HDD, 2-hour battery life, built-in monochrome or color (SL/25C) LCD display, 7.9-lbs.

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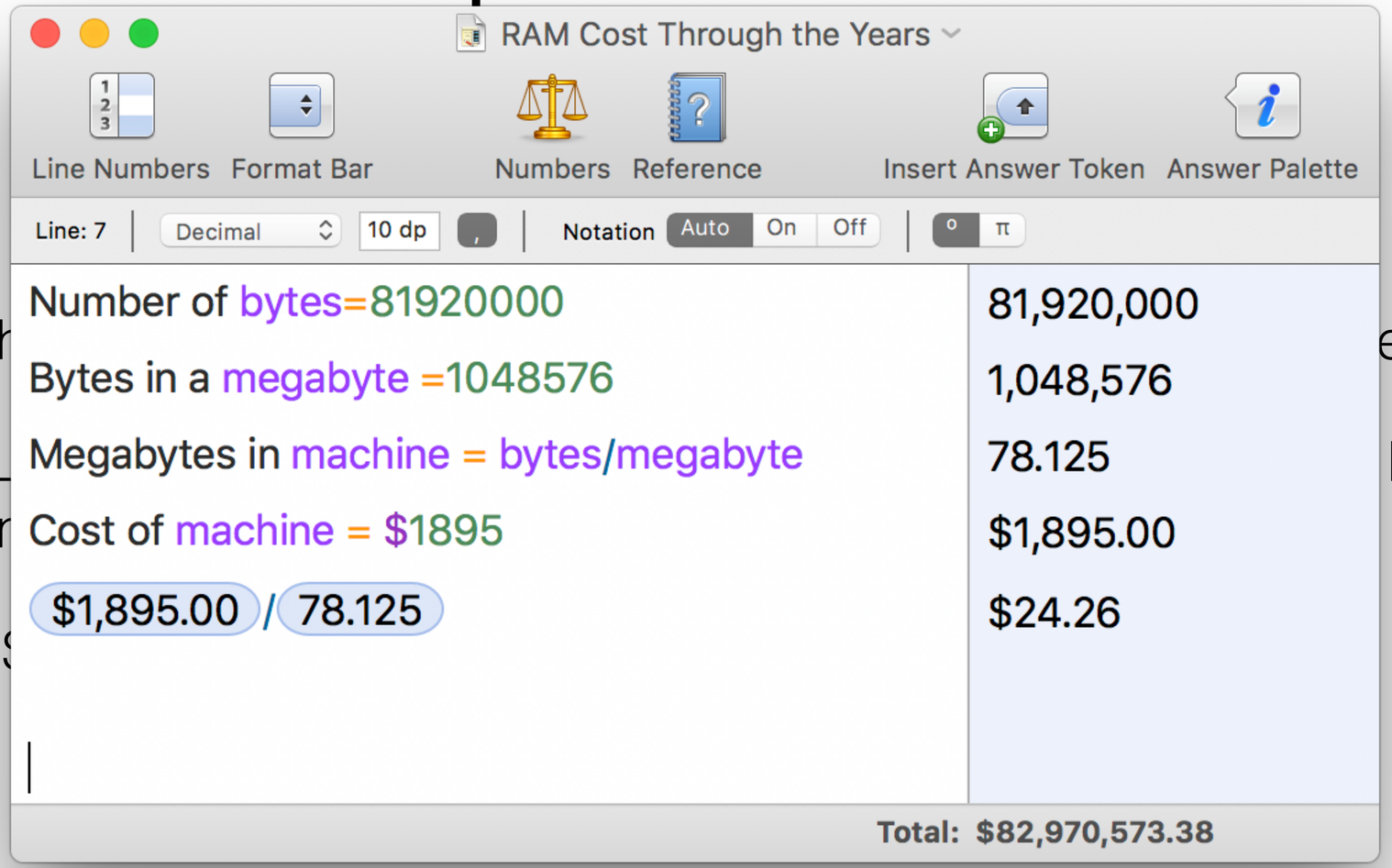
- Intel 386SL CPU, 4Mb RAM, internal 3.5” FDD, 80Mb HDD, 2-hour battery life, built-in monochrome or color (SL/25C) LCD display, 7.9-lbs.
- As above, $1,895

1994: Epson NB-SL/25

- An astonish e time
- Intel 386SL battery life, built-in mor
- As above, $



1995: Apple PowerMac 9500/120

source: MacTracker,
Mike's Home Computer History Tracker

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- Mike’s first Mac

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- Mike’s first Mac
- PPC 604 CPU @ 120Mhz / 40Mhz bus

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1995: Apple PowerMac 9500/120

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- **2Gb** HDD & CD-ROM
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- 16Mb RAM
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- $4,999 (no monitor, keyboard or mouse)
- $7002 w/KVM (17” CRT)

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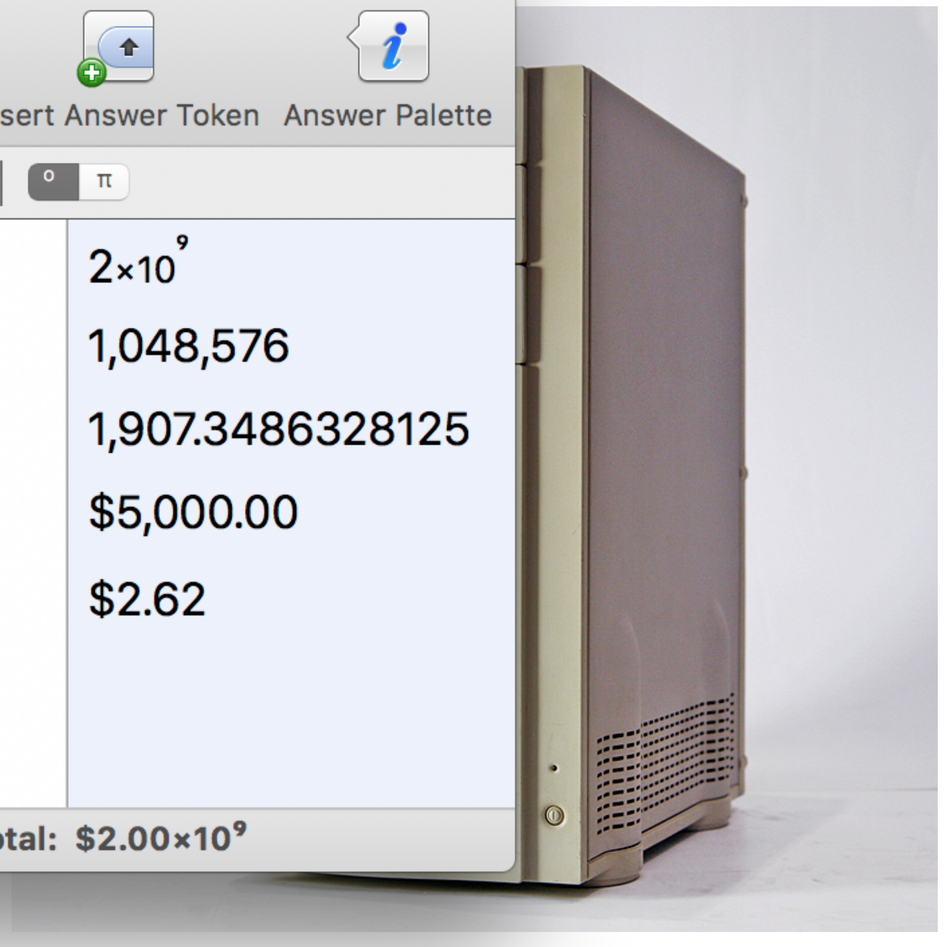
RAM Cost Through the Years

Line Numbers | Format Bar | Numbers | Reference | Insert Answer Token | Answer Palette

Line: 7 | Decimal | 10 dp | , | Notation | Auto | On | Off | ° | π

Number of bytes=2,000,000,000	2×10^{9}
Bytes in a megabyte =1048576	1,048,576
Megabytes in machine = bytes/megabyte	1,907.3486328125
Cost of machine = $5000	$5,000.00
$5,000.00 / 1,907.3486328125	$2.62

Total: 2.00×10^{9}



source: MacTracker,
Mike's Home Computer History Tracker

2003: Apple iMac G4

source: MacTracker,
Mike's Home Computer History Tracker

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- Apple’s first flat-screen Mac

source: MacTracker,
Mike’s Home Computer History Tracker

2003: Apple iMac G4

- Apple’s first flat-screen Mac
- PPC G4 CPU @ 1Ghz / 133Mhz bus

source: MacTracker,
Mike’s Home Computer History Tracker

2003: Apple iMac G4

- Apple’s first flat-screen Mac
- PPC G4 CPU @ 1Ghz / 133Mhz bus
- 1Gb DDR RAM

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- 1Gb DDR RAM
- **80Gb** HDD & 8x SuperDrive

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- **80Gb** HDD & 8x SuperDrive
- $1,997 w/mouse, keyboard & speakers

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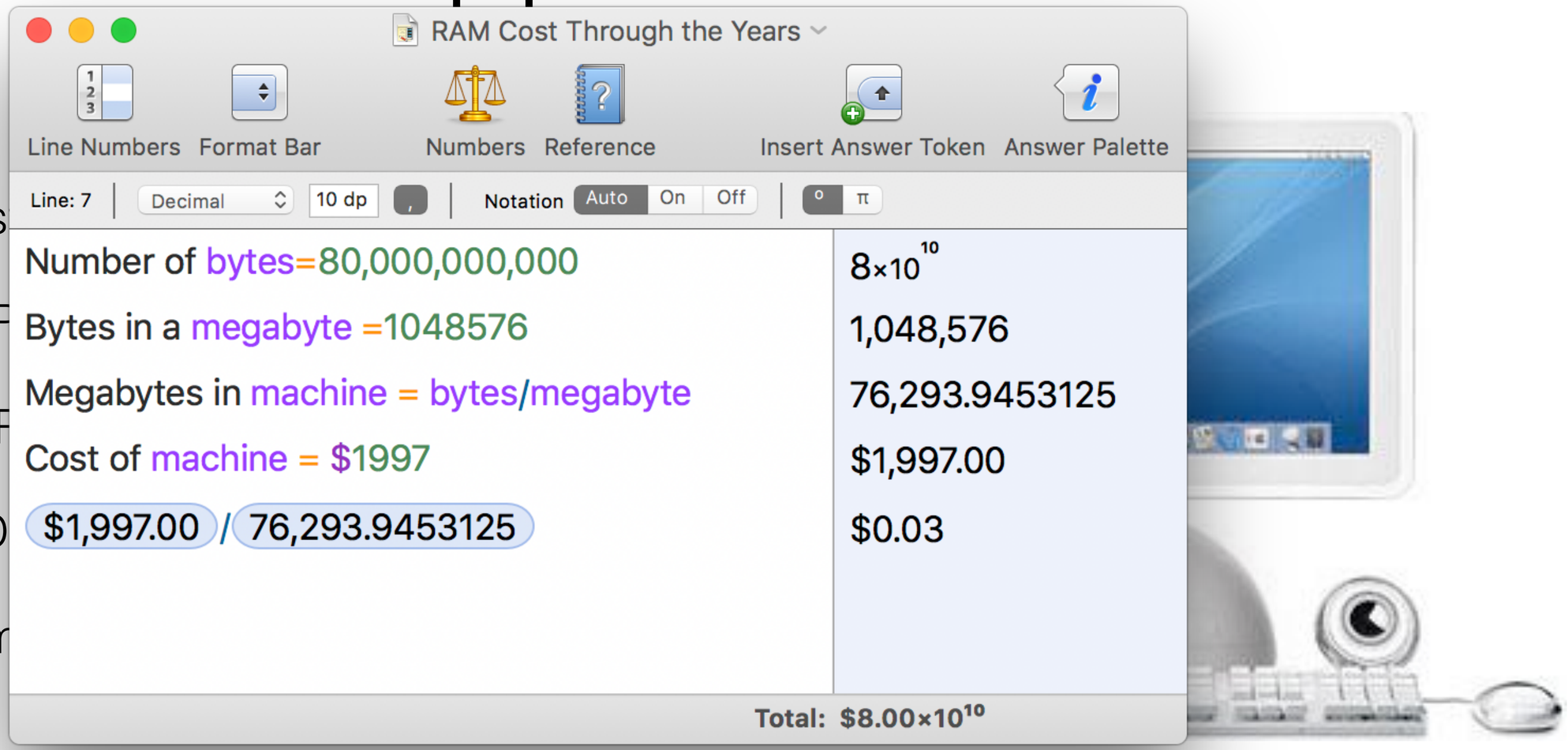
- PPC G4 CP
- 1Gb DDR F
- **80Gb** HDD
- $1,997 w/m



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2010: Apple iMac Intel Core i3

source: MacTracker,
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- Apple’s third-generation flat-screen Intel iMac

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2010: Apple iMac Intel Core i3

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- **1Tb** HDD
- $1,699

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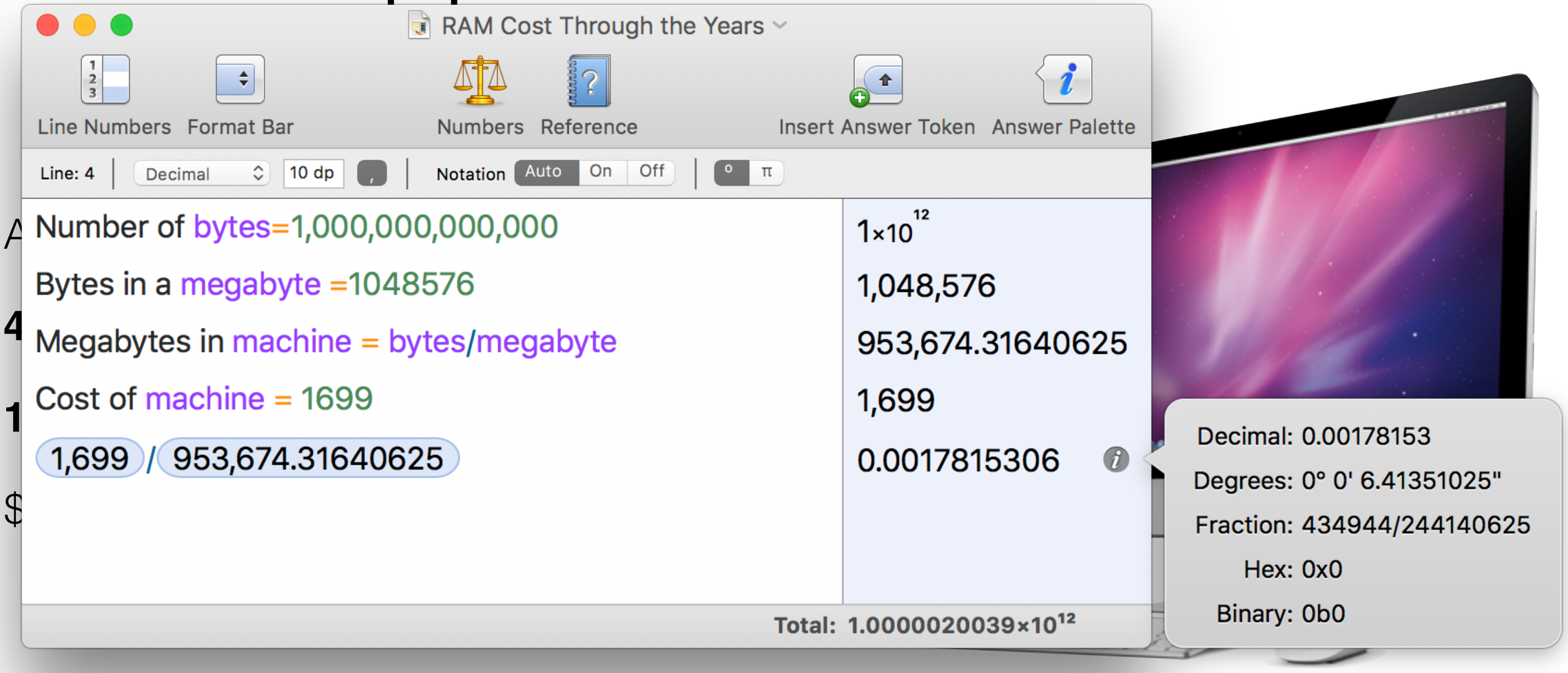

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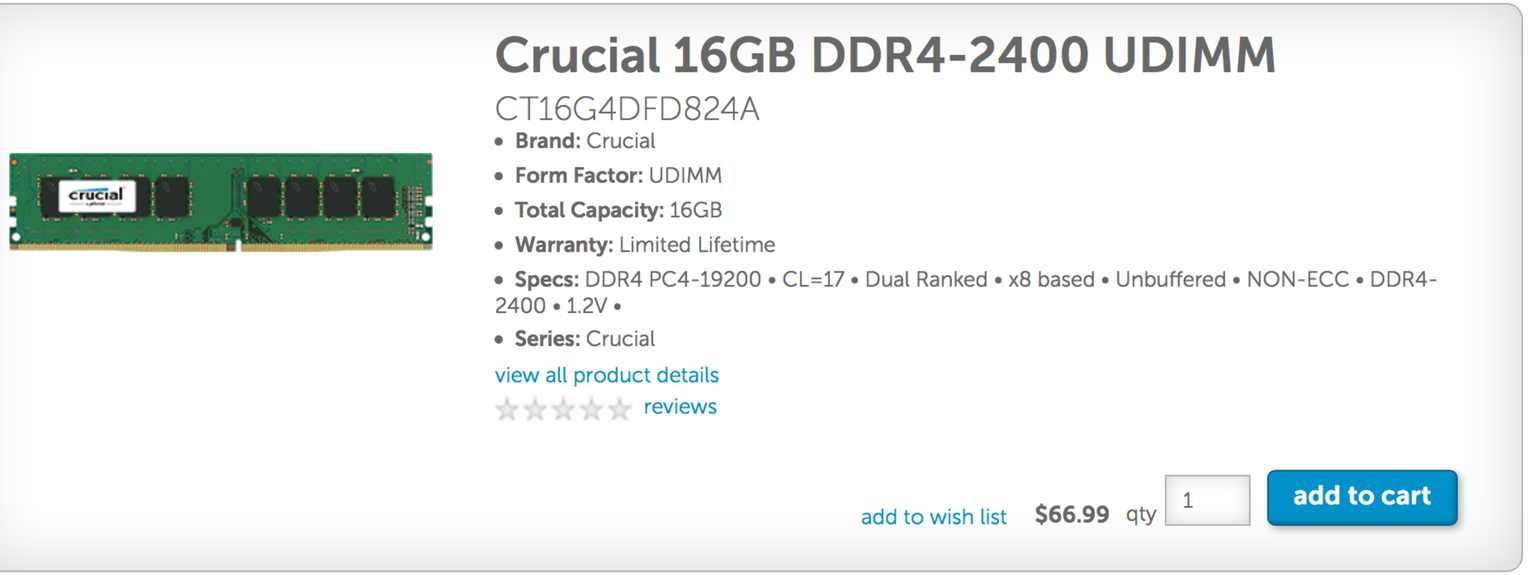
2016: Add-On RAM for PC/Mac



source: crucial.com

2016: Add-On RAM for PC/Mac

- Commodity RAM for PC/Mac at retail, quantity 1: $67/16Gb

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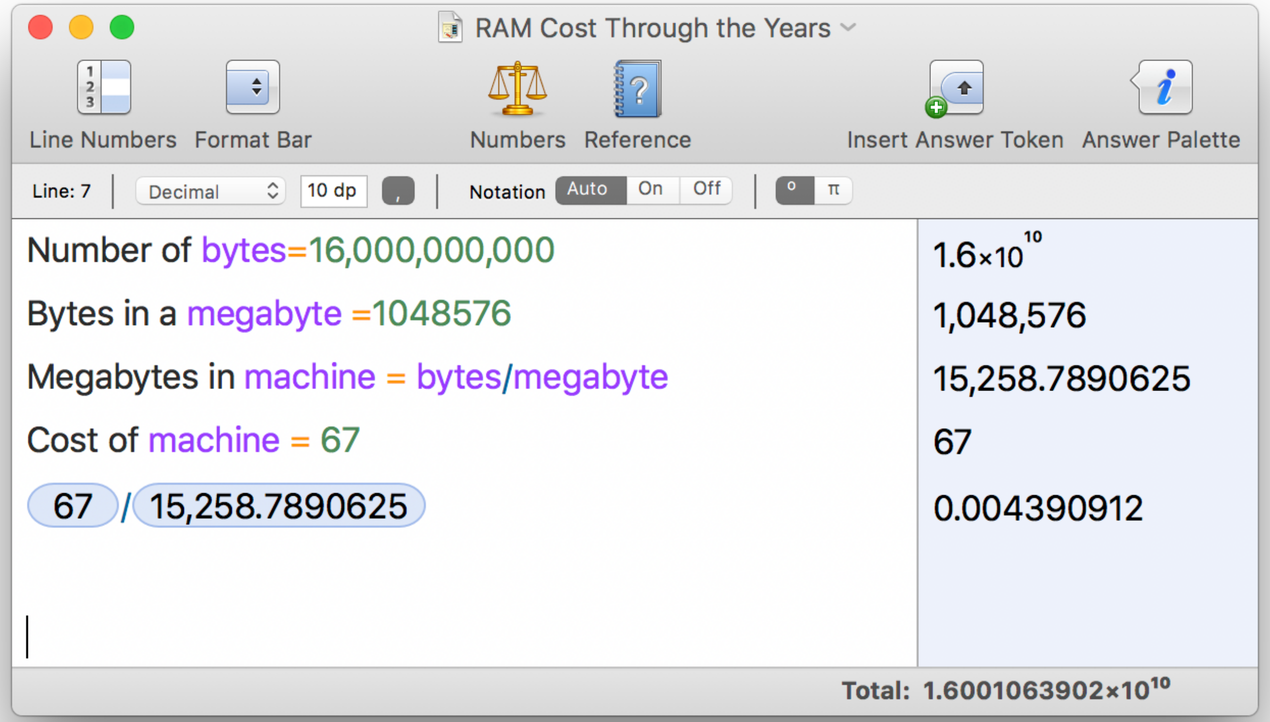

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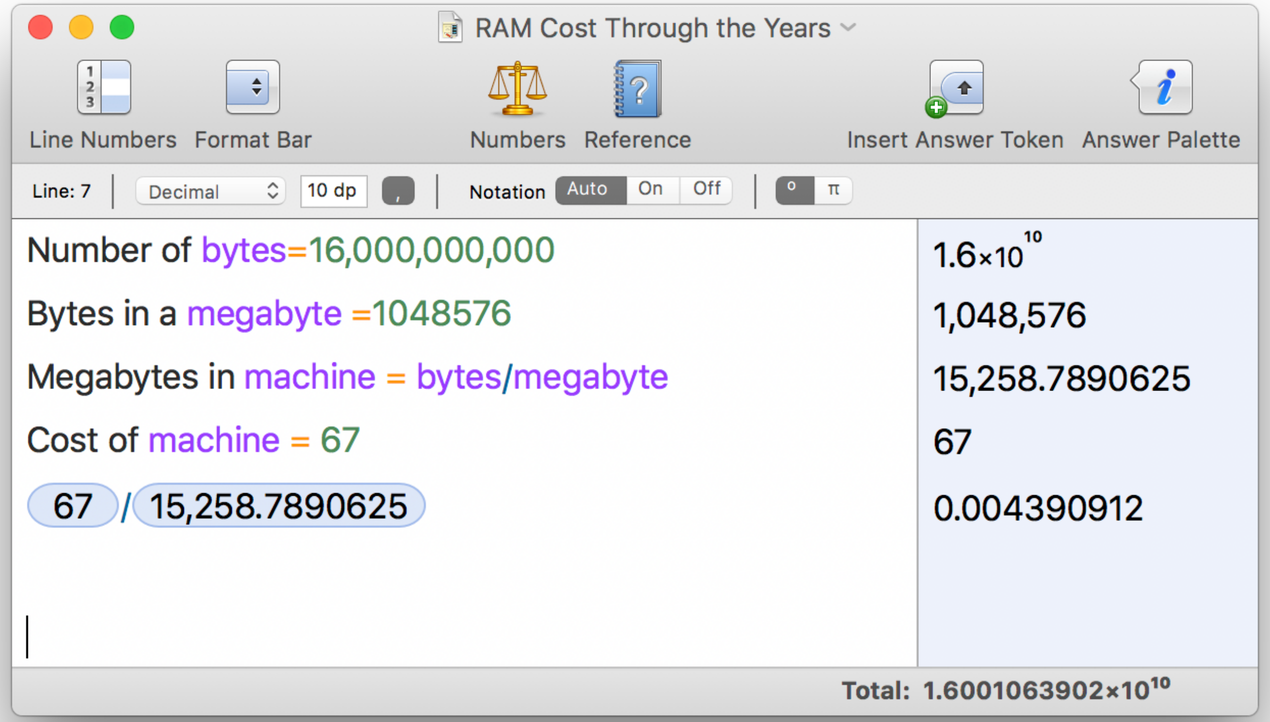
2016: Add-On RAM for PC/Mac

- Commodity RAM for PC/Mac at retail, quantity 1: $67/16Gb
- Four-tenths of a cent per megabyte!



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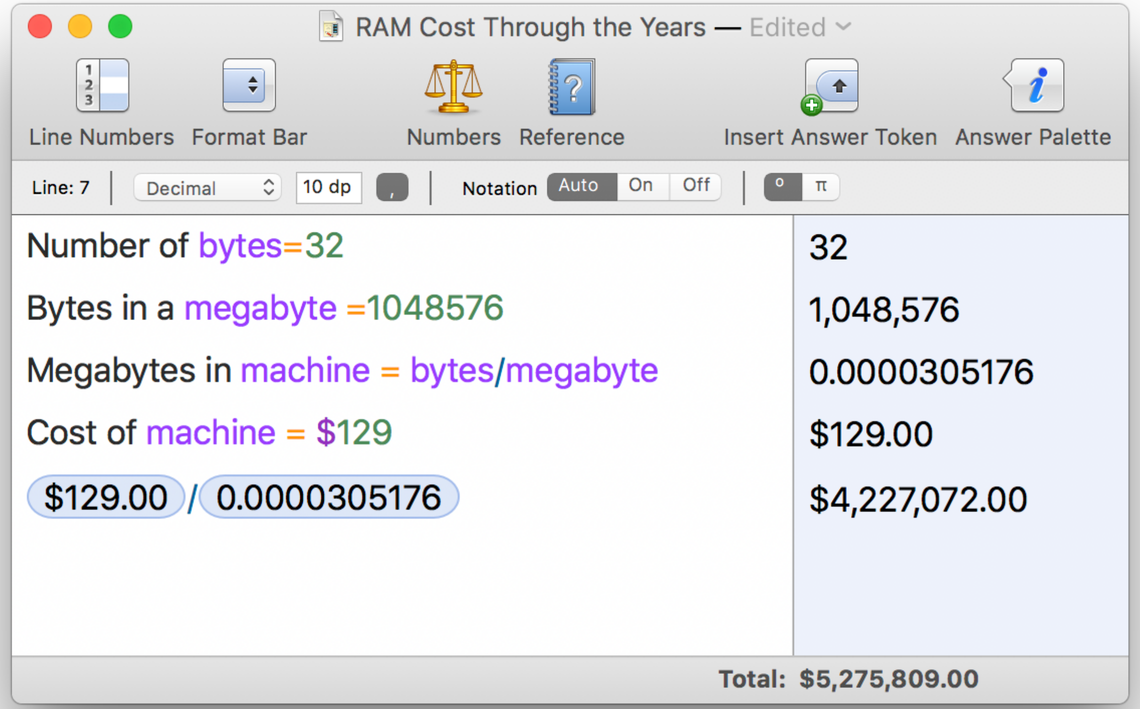
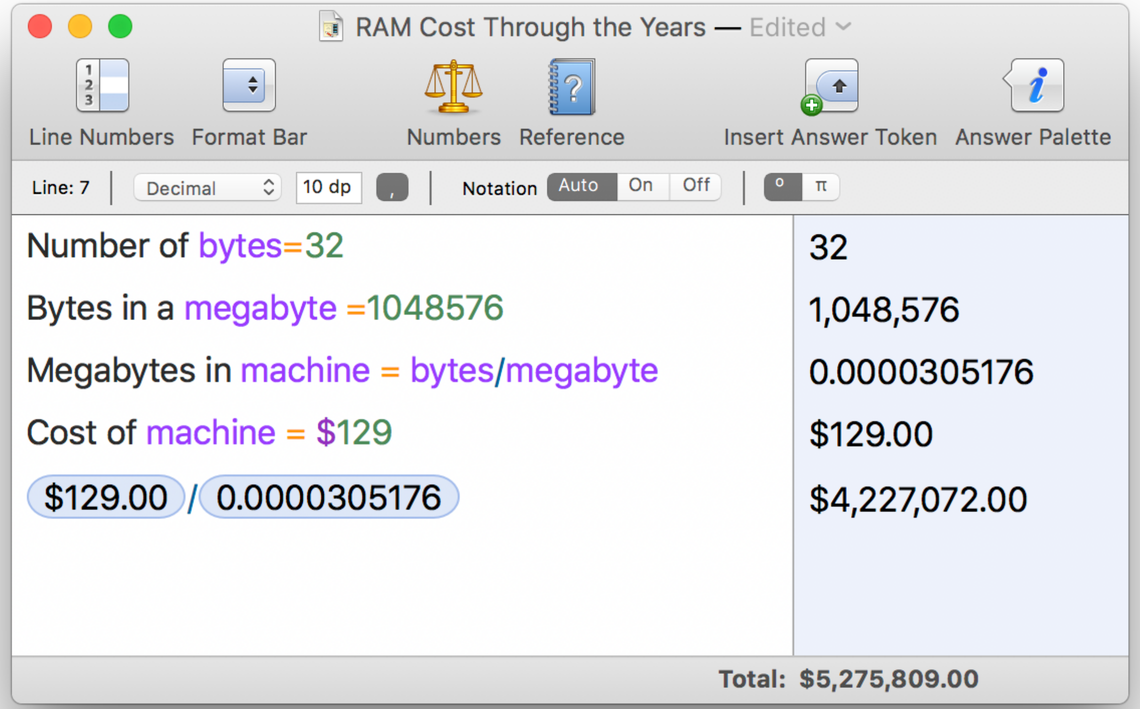
1977

1977


RAM Cost Through the Years — Edited
Line Numbers
Format Bar
Numbers
Reference
Insert Answer Token
Answer Palette
Line: 7
Decimal
10 dp
,
Notation
Auto
On
Off
°
π
Number of bytes=32
32
Bytes in a megabyte =1048576
1,048,576
Megabytes in machine = bytes/megabyte
0.0000305176
Cost of machine = $129
$129.00
$129.00 / 0.0000305176
$4,227,072.00
Total: $5,275,809.00

1977

2016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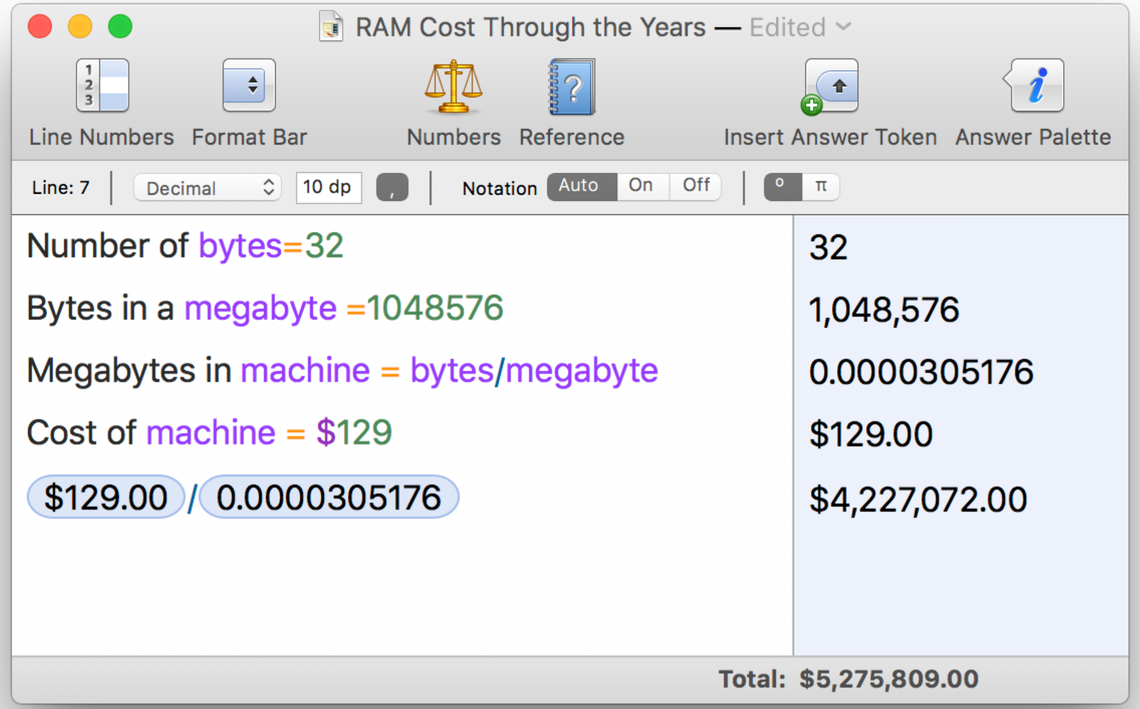
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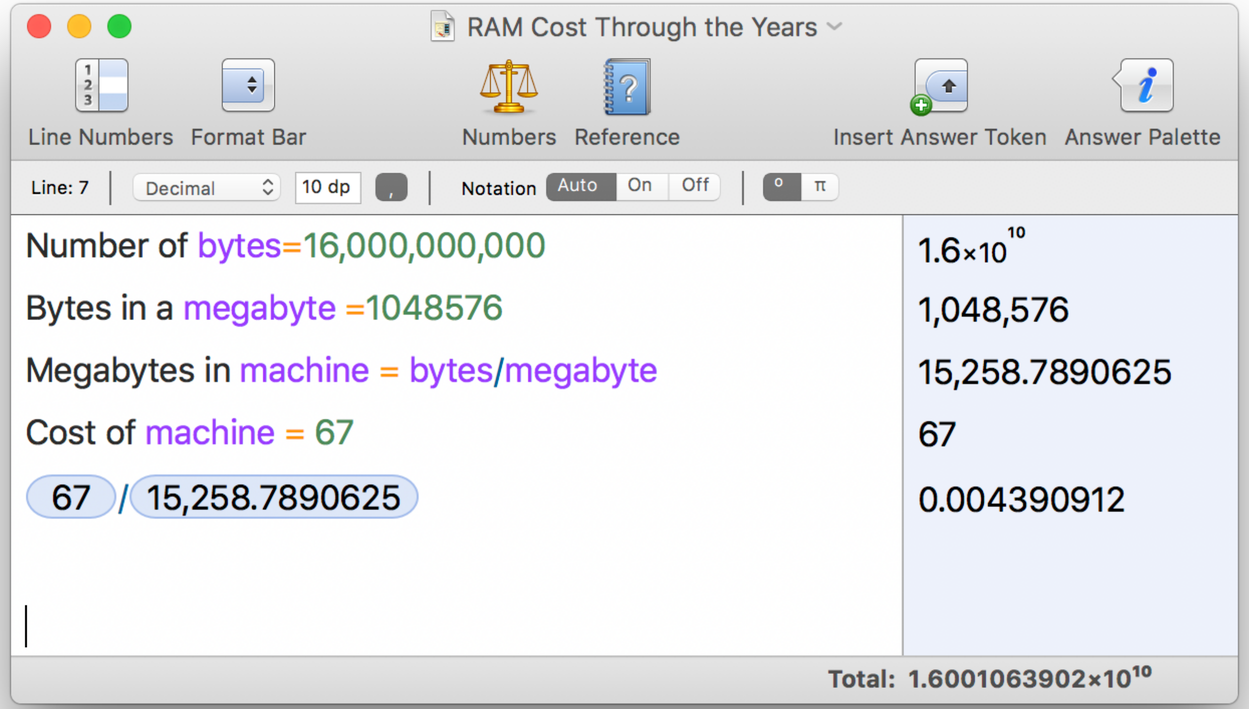
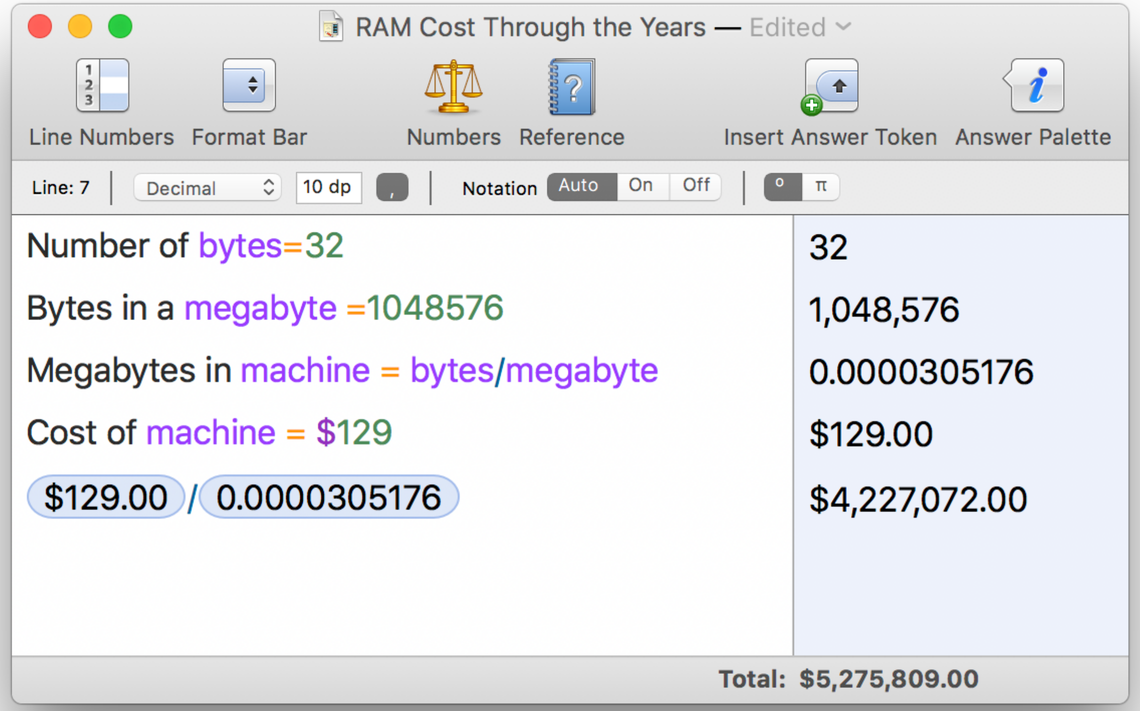
Total: $5,275,809.00

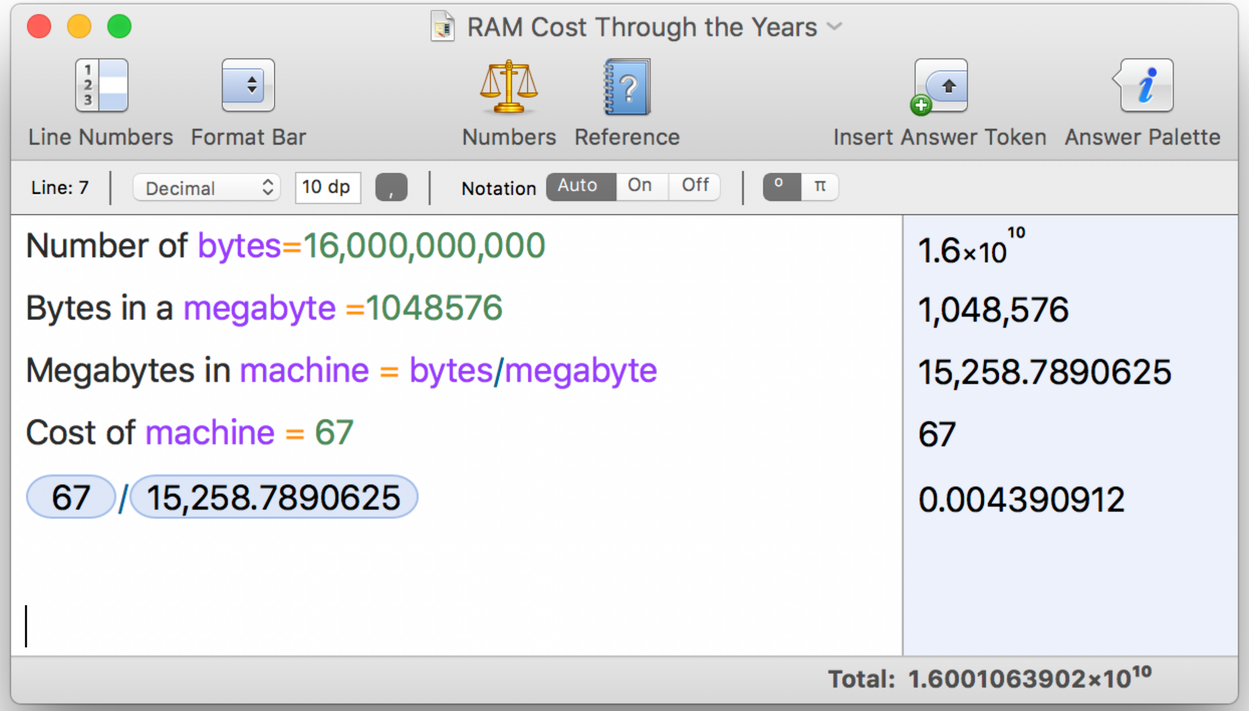
2016


RAM Cost Through the Years
Line Numbers
Format Bar
Numbers
Reference
Insert Answer Token
Answer Palette
Line: 7
Decimal
10 dp
Notation
Auto
On
Off
Number of bytes=16,000,000,000
1.6×10^10
Bytes in a megabyte =1048576
1,048,576
Megabytes in machine = bytes/megabyte
15,258.7890625
Cost of machine = 67
67
67 / 15,258.7890625
0.004390912
Total: 1.6001063902×10^10

1977

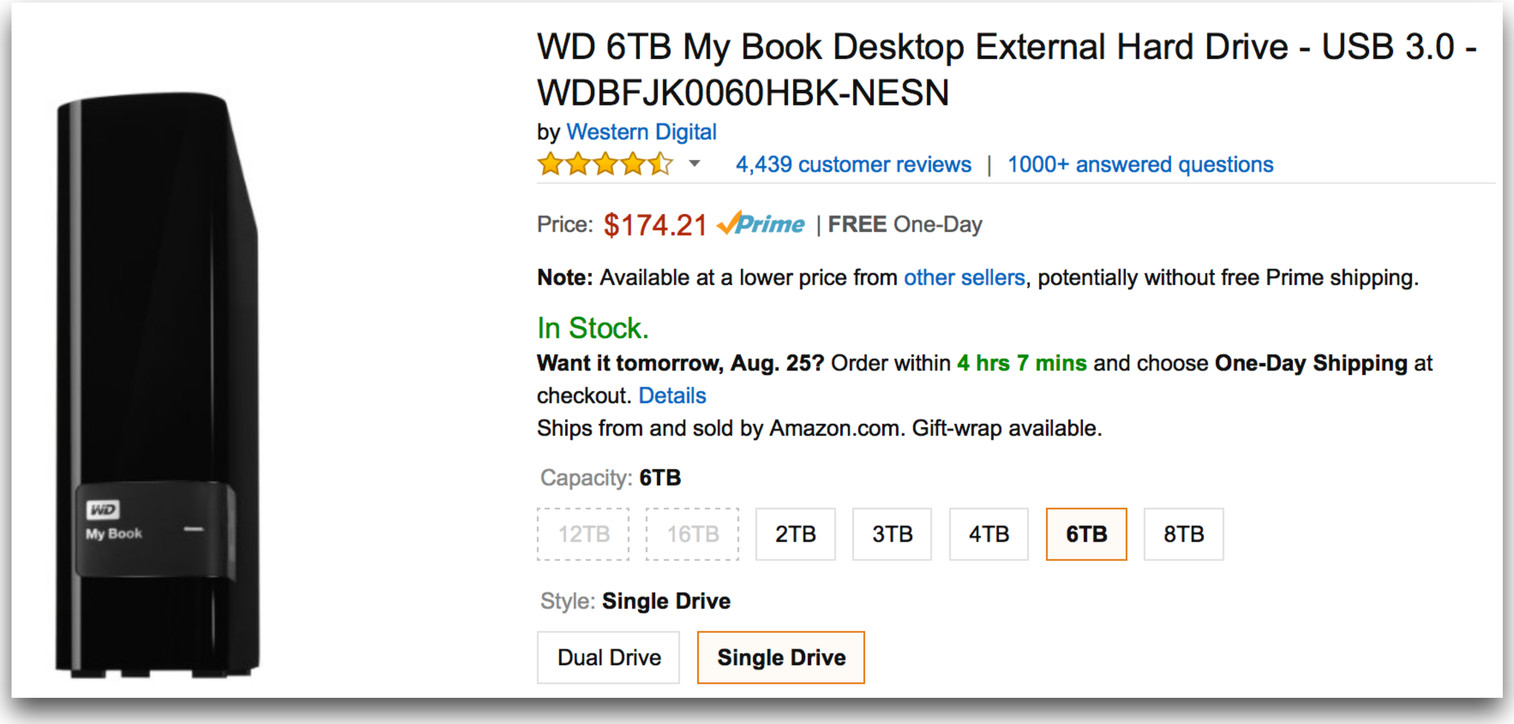


2016



The price of consumer RAM has fallen by NINE ORDERS OF MAGNITUDE, or 99.9999999%!

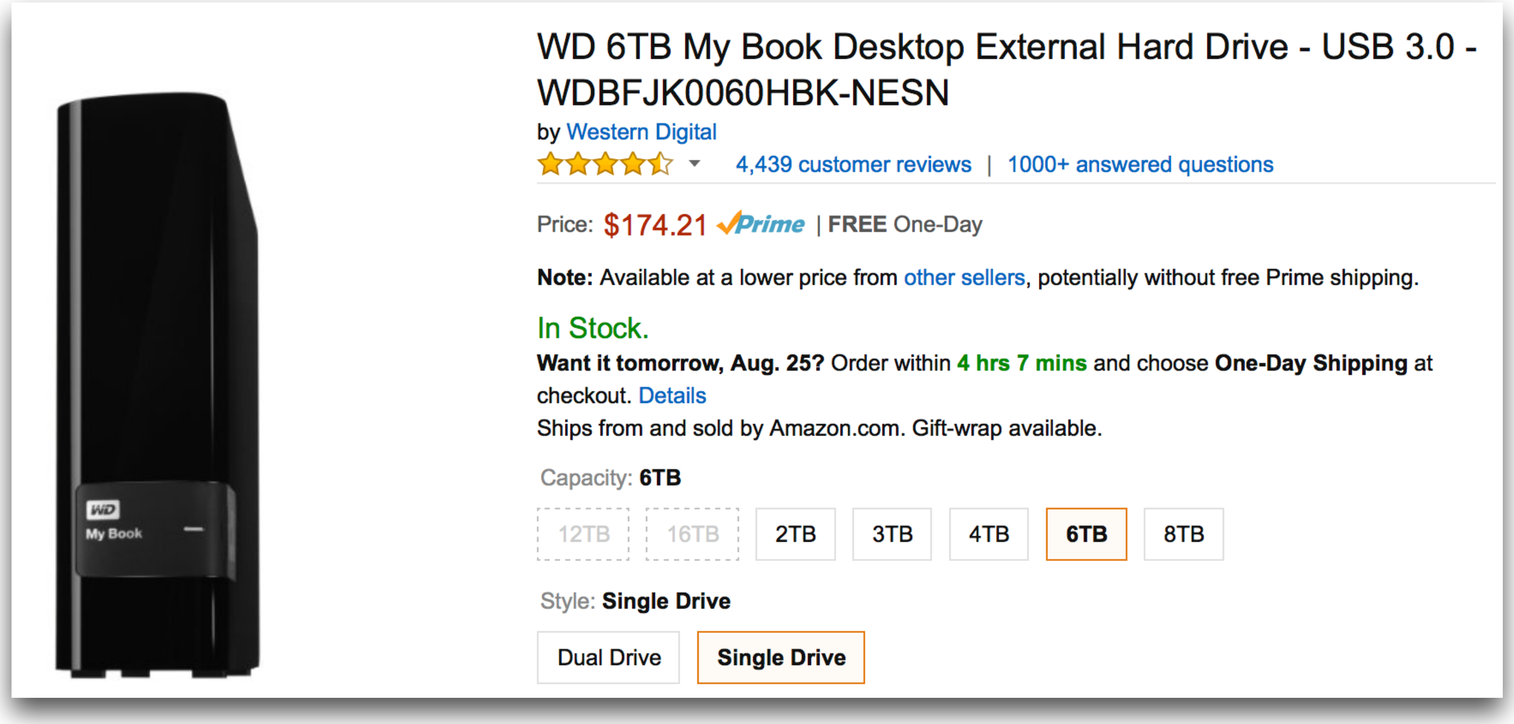
2016: Add-On Storage



source: amazon.com, 8/25/16

2016: Add-On Storage

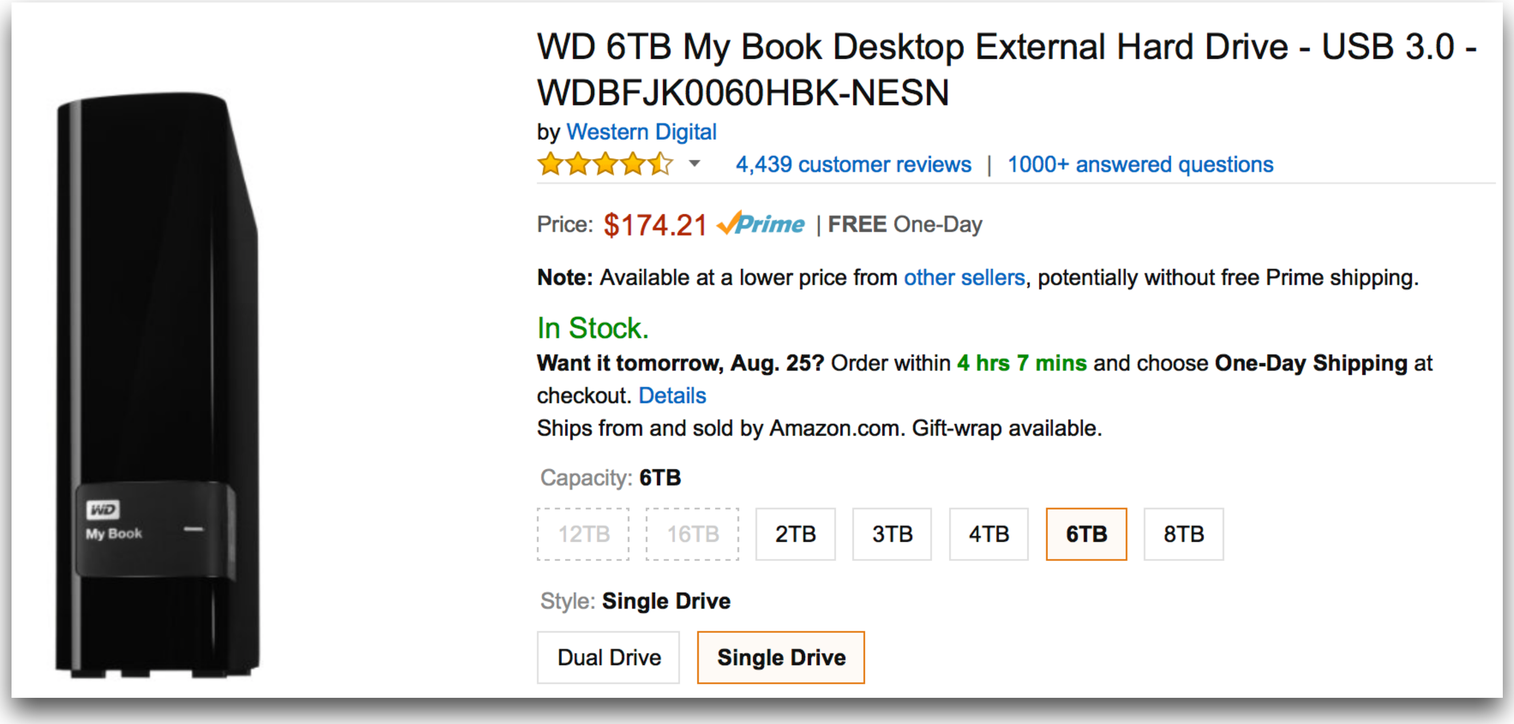
- Commodity HD for PC/ Mac at retail, quantity 1: $175/6Tb



source: amazon.com, 8/25/16

2016: Add-On Storage

- Commodity HD for PC/ Mac at retail, quantity 1: $175/6Tb
- That's $0.03/**Mb**



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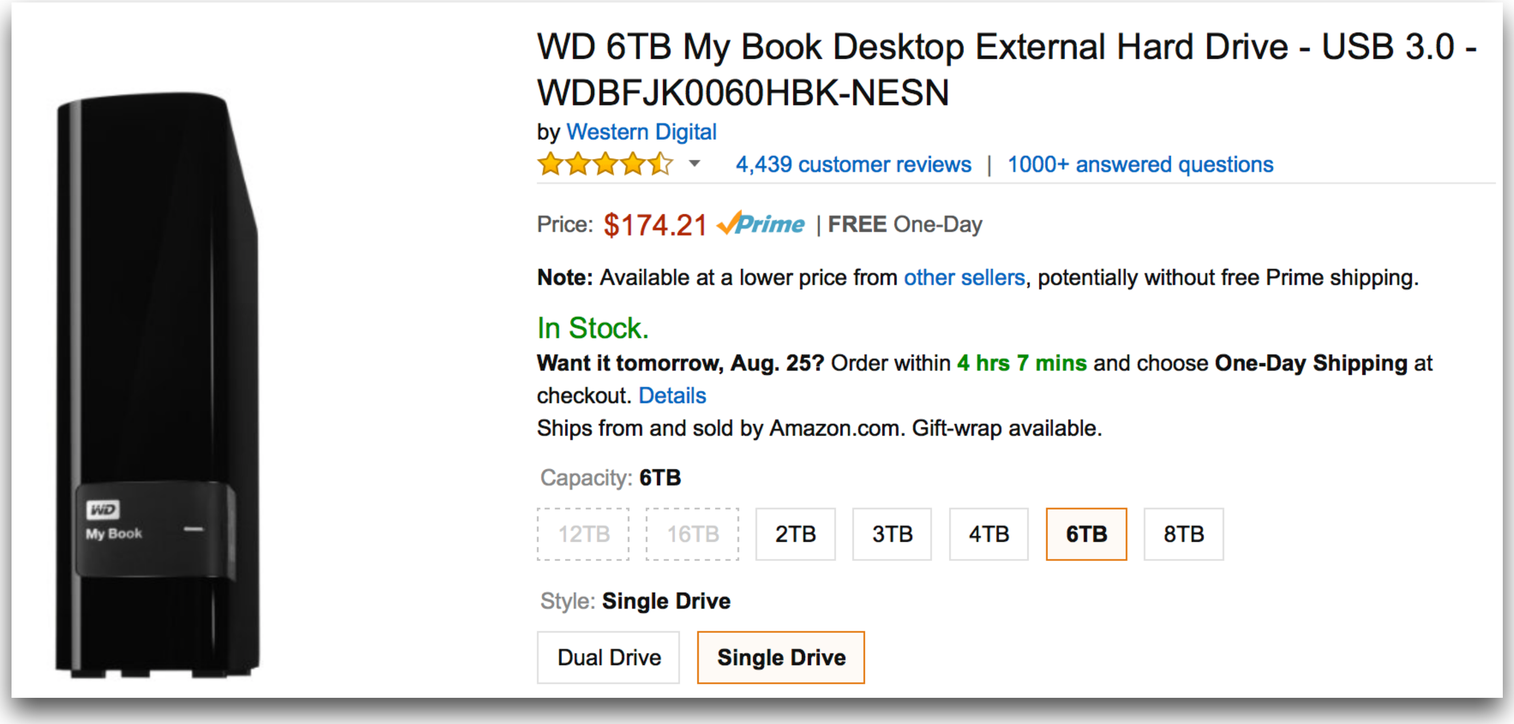
- That's $0.03/**Mb**
- Or…



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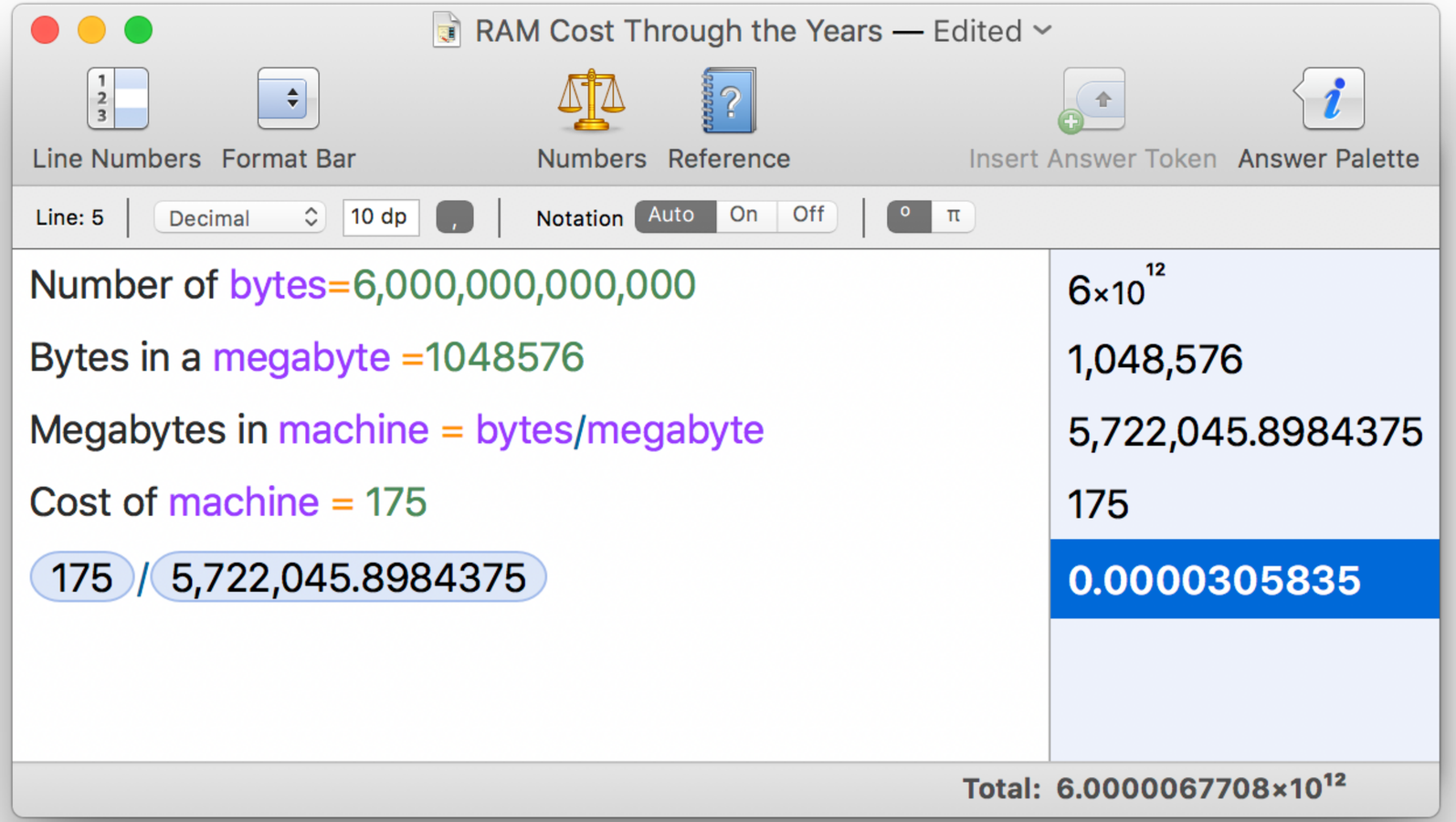

source: amazon.com, 8/25/16

2016: Add-On Storage

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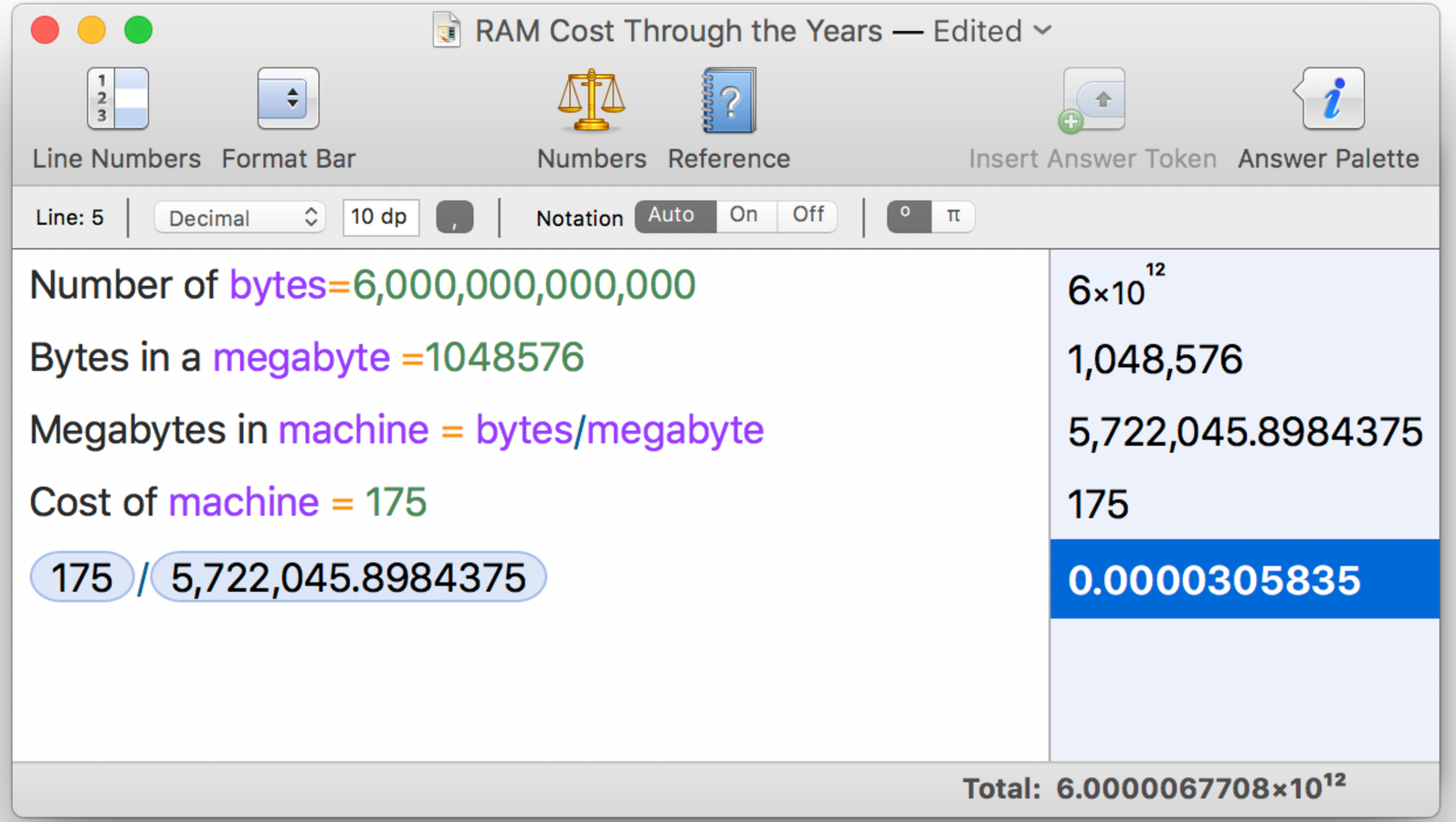
- Or…
- **…$0.00003/byte**



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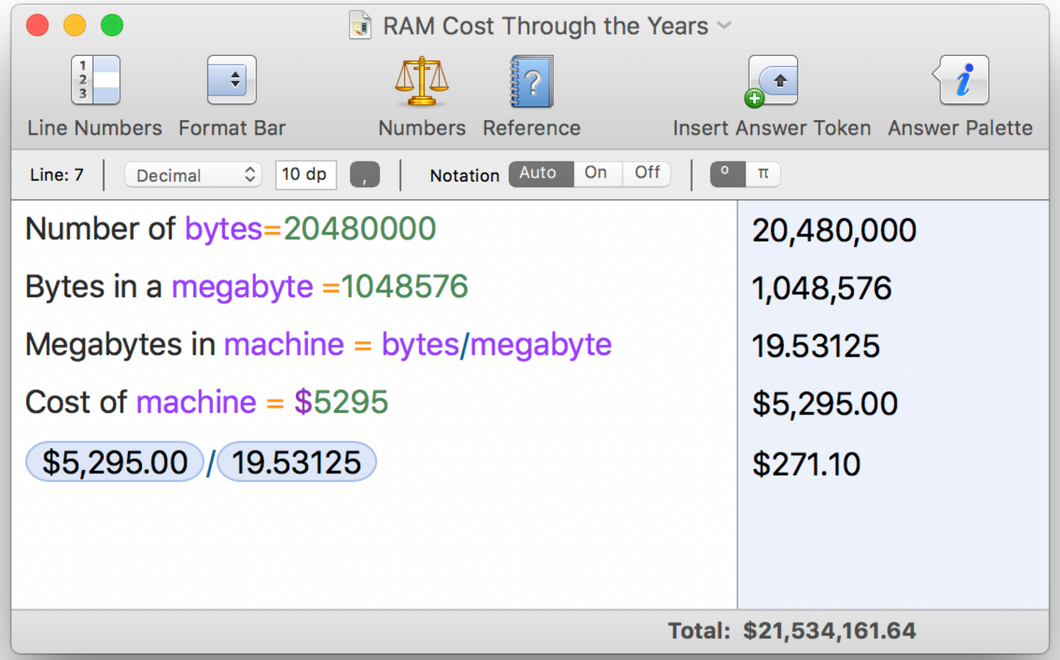
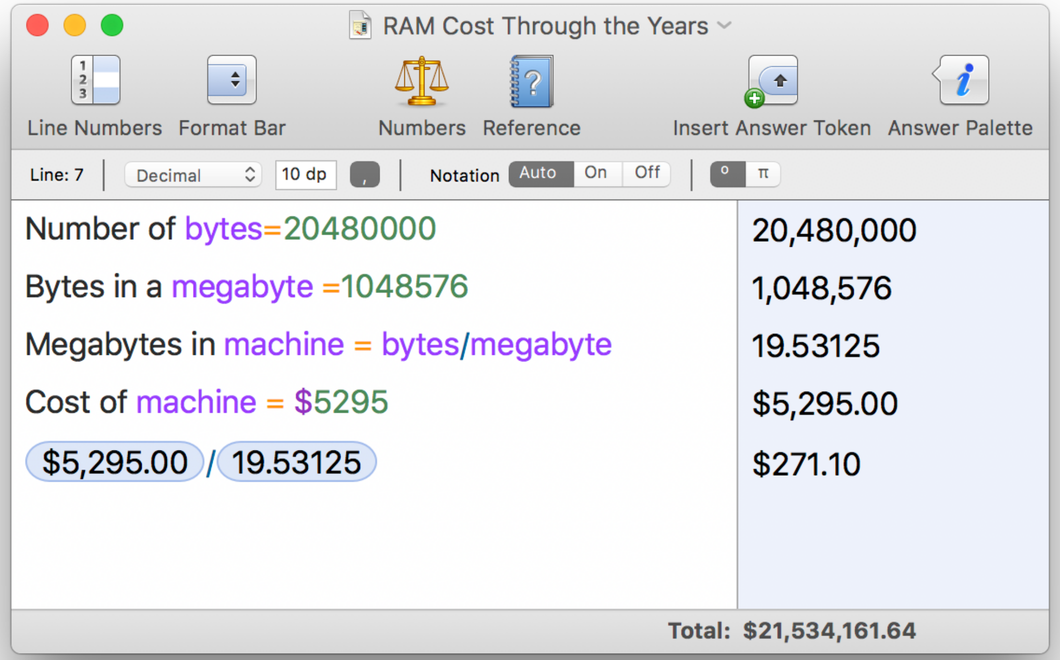
1984: PC/AT


RAM Cost Through the Years
Line Numbers
Format Bar
Numbers
Reference
Insert Answer Token
Answer Palette
Line: 7
Decimal
10 dp
Notation
Auto
On
Off
Number of bytes=20480000
20,480,000
Bytes in a megabyte =1048576
1,048,576
Megabytes in machine = bytes/megabyte
19.53125
Cost of machine = $5295
$5,295.00
$5,295.00 / 19.53125
$271.10
Total: $21,534,161.64

1984: PC/AT



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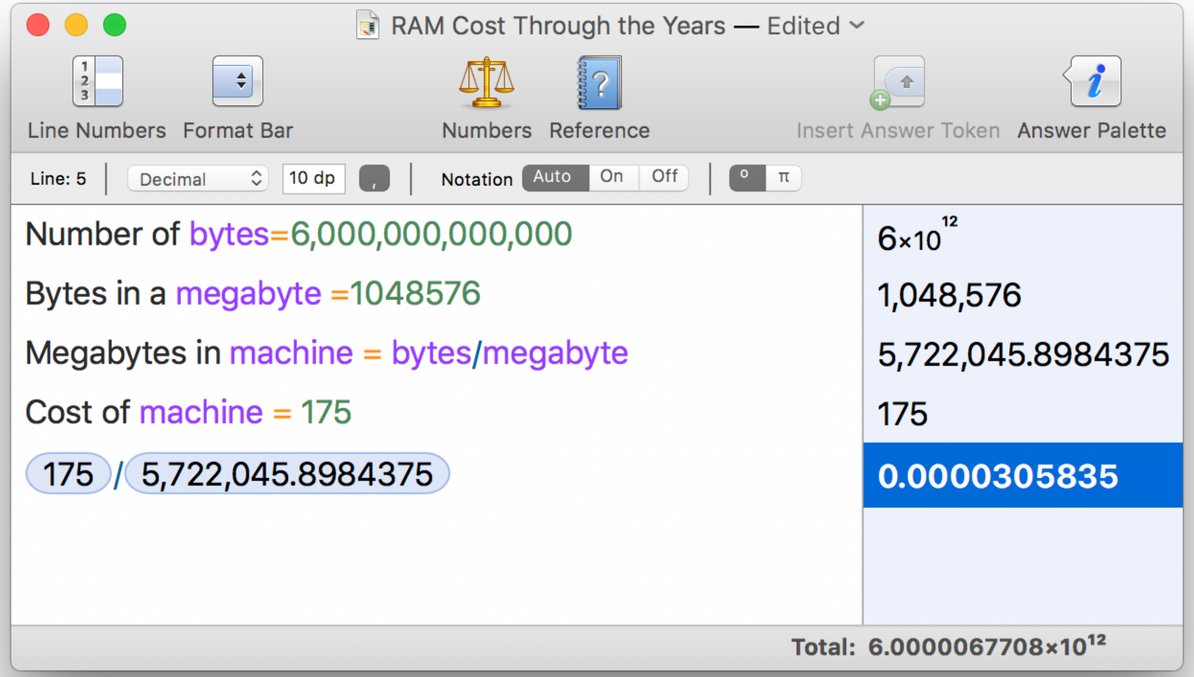

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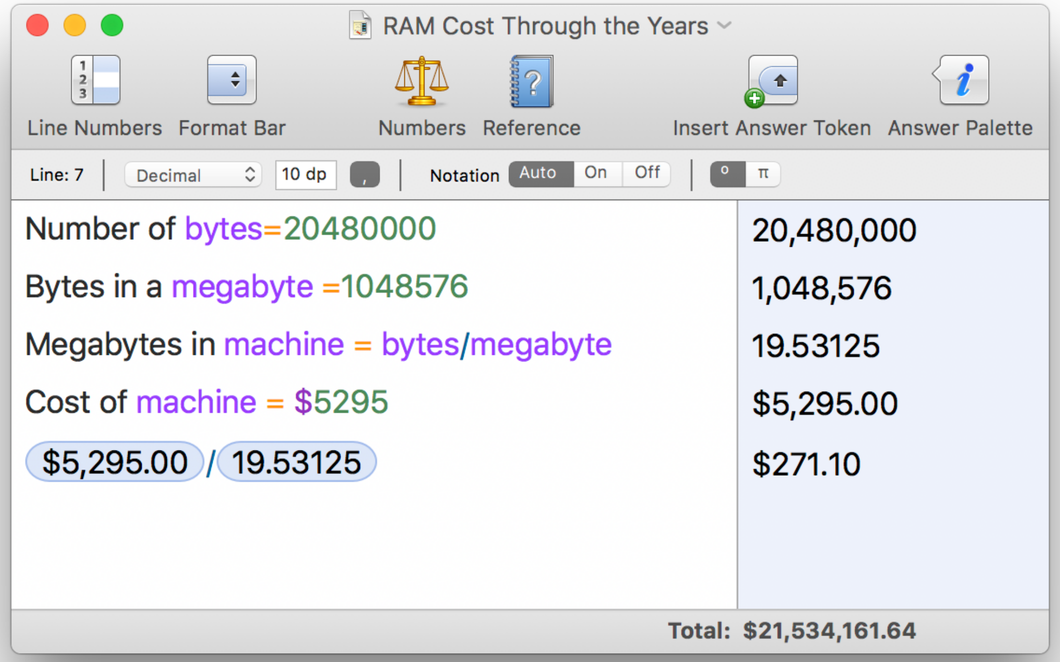

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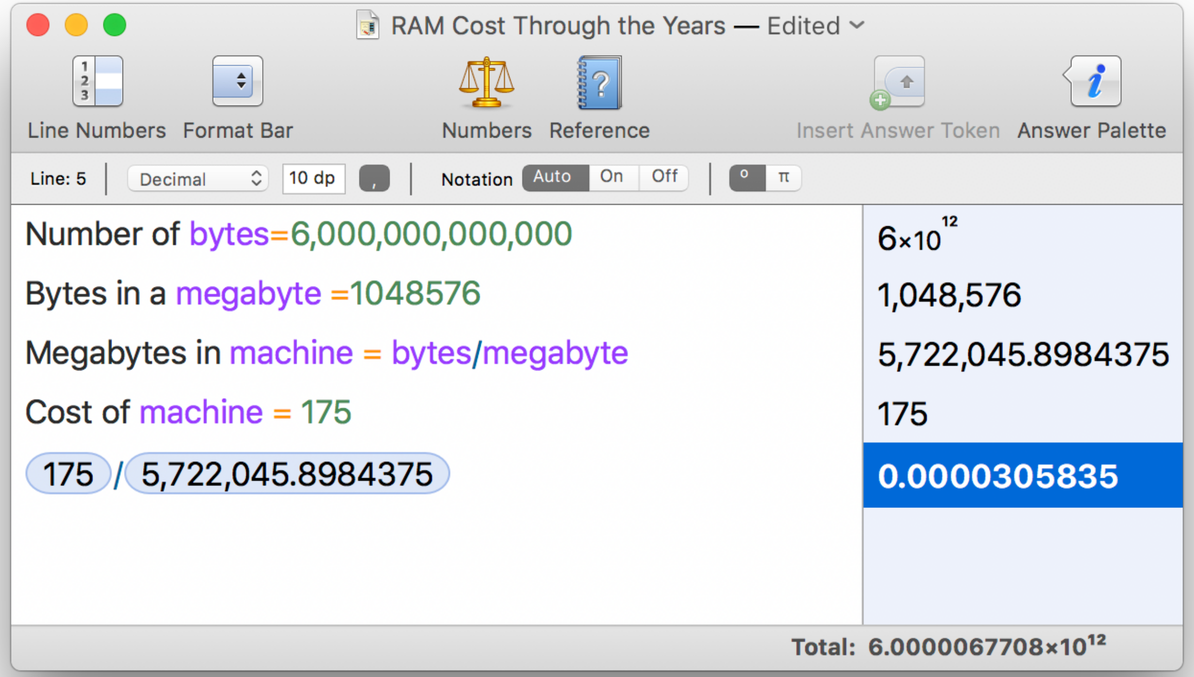

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source: computerhistory.org

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2.2-ton IBM 305 Disk Drive (3.75Mb)
being loaded into a DC-3, 1956
Rented to the US Navy for $3,200/month

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Generic 2Gb microSD card
Sells for less than $6
533x more capacity

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amazon.com

Final Details for Order #102-6151928-8841808

Print this page for your records.

Order Placed: August 10, 2016
Amazon.com order number: 102-6151928-8841808
Order Total: $447.99

Shipped on August 11, 2016

Items Ordered	Price
1 of: *Panasonic ZS60 Lumix 4k Digital Camera 18 MP 24-720mm LEICA DC Lens Black + Transcend 32 GB Memory Card + Tripod + Battery + Lowepro Case + Ritz Gear* Sold by: RitzCamera (seller profile) Condition: New Panasonic Authorized Dealer. America's trusted camera store since 1918.	$447.99

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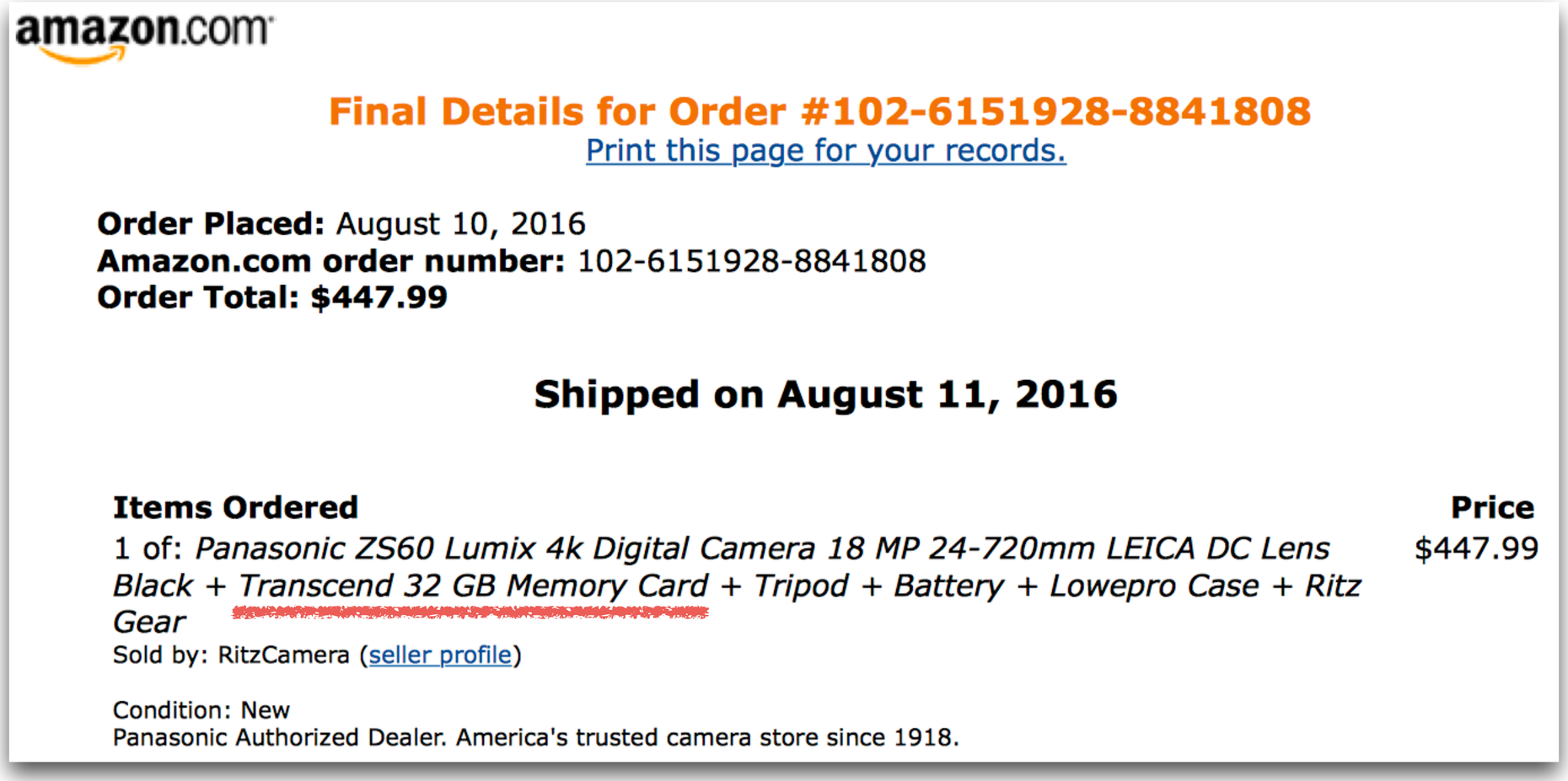
When I bought a new camera this month,
Ritz Camera **threw in** a **32Gb** SD card.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For free.

Support the Cove Apple Club

coveappleclub.com

Cove Apple Club

COVE APPLE CLUB

Have fun & do more with your Apple gear!

HOME MEETINGS EMAIL LIST SHOP ARCHIVES

SHARE. LEARN. LAUGH!

Join **over 100 Cypress Cove residents and members** in the Cove Apple Club, and you'll learn more and get a lot more fun and productivity out of all your Apple gear!

We meet twice a month, year-round. Check our upcoming meeting schedule and plan to join us at our next meeting!

If you're new to the world of Apple, an old Machead from years back, or even a frustrated Windows user, you will find something interesting and entertaining at each of our meetings. Our meetings are fun and informative, with topics presented covering the range from beginner to advanced.

Our focus is on Apple products, but we often also look at other new technologies not specific to the Apple platform, ranging from computer security to Internet telephony to changes in the industry to neat new tech gadgets of interest to everyone.

All Apple products are fair game at our meetings: iPad, iPhone, iPod and Macs of all sizes, as well as the huge world of Apple software, hardware and accessories.

Find out more about the club, our meeting schedule and how you can get in on the fun. Click the links below for details, and be sure to join our email list for all the latest updates.

NOT JUST FOR NERDS!

Everyone is welcome at our club meetings. We warmly welcome curious or frustrated PC, Windows and Android users, as well as anyone interested in anything Apple-related. There's a little something for everyone at each and every Cove Apple Club meeting, so don't miss out!

JOIN US!

MEETINGS

ARCHIVES

EMAIL LIST

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SUPPORT THE COVE APPLE CLUB WHEN YOU SHOP AT AMAZON.COM

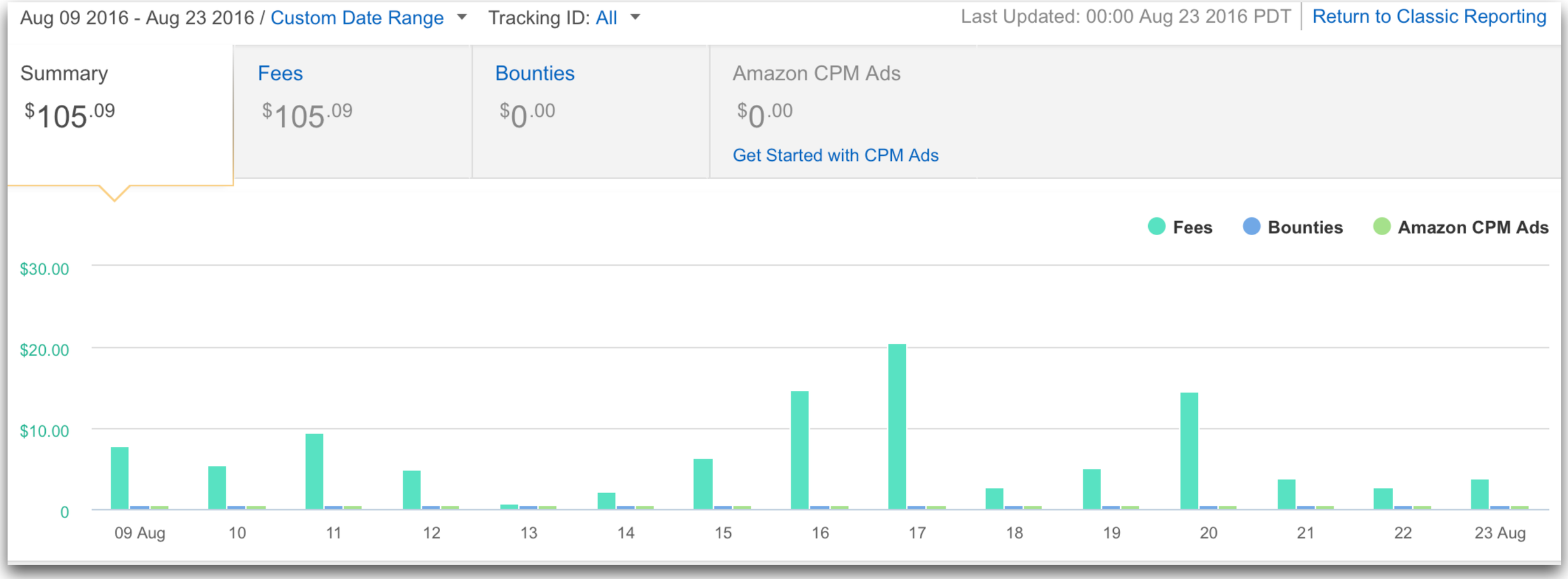
The next time you need some new Apple or other tech gear (or anything else from the 20,000,000 items in stock!), start your online shopping session with our link to Amazon.com. Your purchase will earn a little money for the Cove Apple Club, which we save up all year for a big Holiday Party for all members of the club! We update club members on the earnings every month.

So be sure to click the Amazon logo below when you need to shop for Mac products online...and “give back” to the Cove Apple Club -- without costing you an extra cent! Thanks!

THREE EASY WAYS TO USE THE AMAZON SHOPPING LINK

1. Just click here — you'll be sent to the Amazon.com homepage.
    1. Once you arrive at the Amazon homepage, BOOKMARK that page:
        1. In Safari on Mac, type Cmd-D
        2. In Safari on iOS, tap the Share widget, then tap Add to Favorites or Add Bookmark.
2. Drag this link to your Favorites bar in your Web browser. Then it's handy anytime you want to visit Amazon.
3. Just click the Amazon banner ad below.

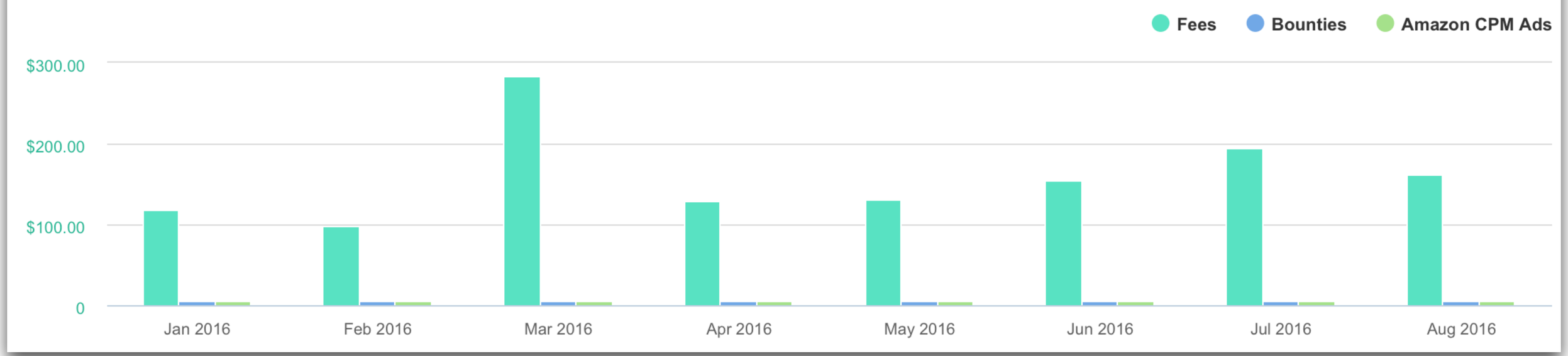
Since We Last Met



2016 YTD

Jan 01 2016 - Aug 23 2016 / This Year Tracking ID: All Last Updated: 00:00 Aug 23 2016 PDT | Return to Classic Reporting

Summary	Fees	Bounties	Amazon CPM Ads
$1,275.67	$1,272.67	$3.00	$0.00
			Get Started with CPM Ads



Obama for America 2012

The “Secret Weapon” that really was secret.

2008 President: McCain/Palin vs. Obama/Biden

National	FOX News	Obama 50, McCain 43	Obama +7
National	NBC News/Wall St. Jrnl	Obama 51, McCain 43	Obama +8
National	Gallup	Obama 55, McCain 44	Obama +11
National	Diageo/Hotline	Obama 50, McCain 45	Obama +5
National	CBS News	Obama 51, McCain 42	Obama +9
National	ABC News/Wash Post	Obama 53, McCain 44	Obama +9
National	Ipsos/McClatchy	Obama 53, McCain 46	Obama +7
National	GWU/Battleground	Obama 50, McCain 44	Obama +6

Election Day 2008 national poll summary
Source: Real Clear Politics

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- Obama/Biden had a clear and decisive lead through the primaries and into the general

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2008 President: McCain/Palin vs. Obama/Biden

- Obama/Biden had a clear and decisive lead through the primaries and into the general
- On election day, it was widely believed Obama/Biden would win easily

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National	NBC News/Wall St. Jrnl	Obama 51, McCain 43	Obama +8
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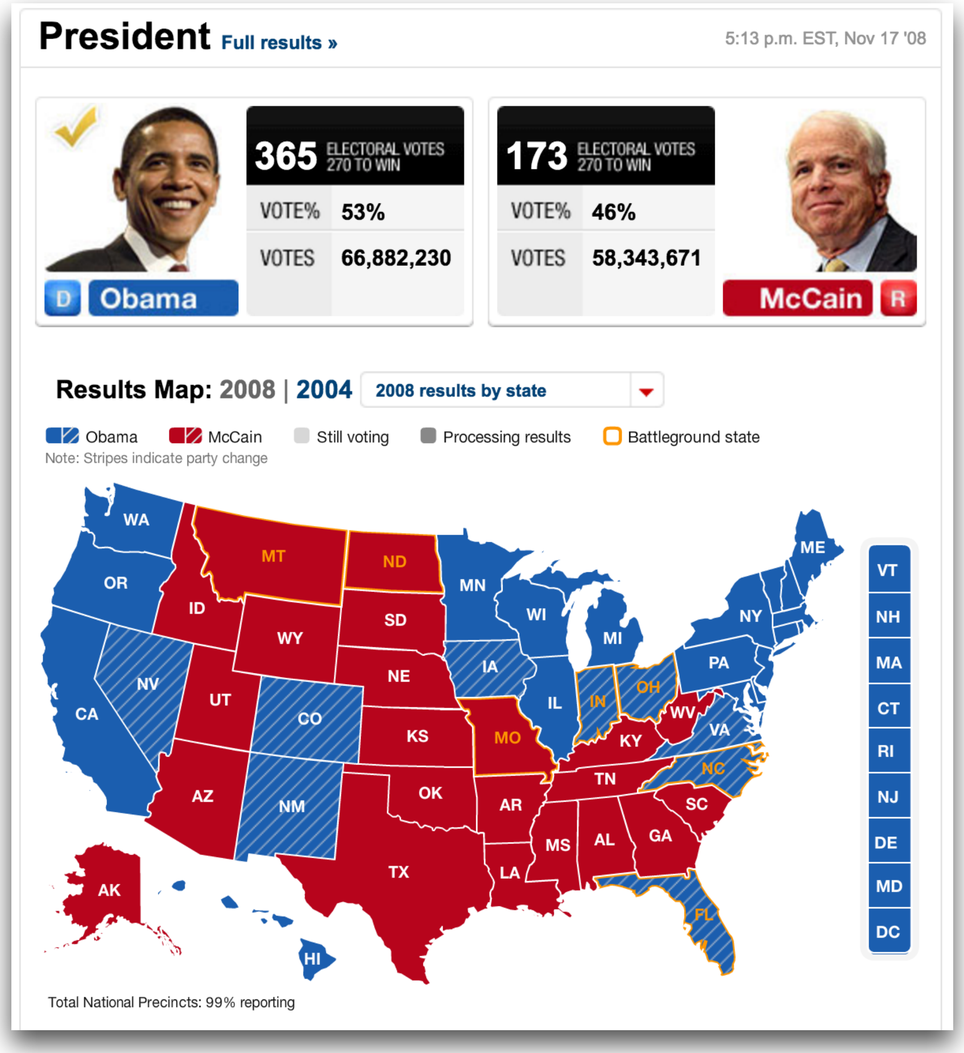
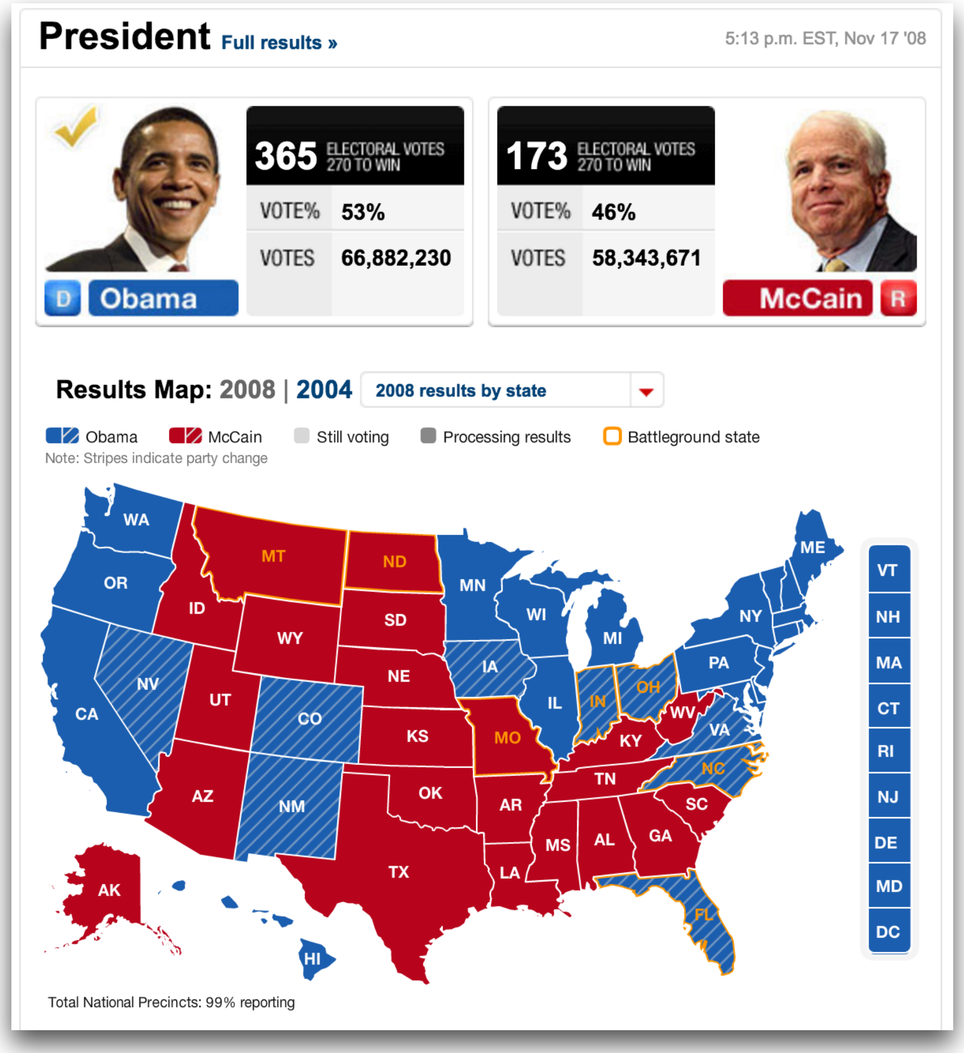
Result: Obama/Biden by 7%



Election Day 2008 Results by State
Source: FEC.gov

Result: Obama/Biden by 7%

- Obama won virtually all big electoral states, plus took nine traditional GOP-held states (NV, CO, NM, NC, VA, IN, OH, IA, FL)



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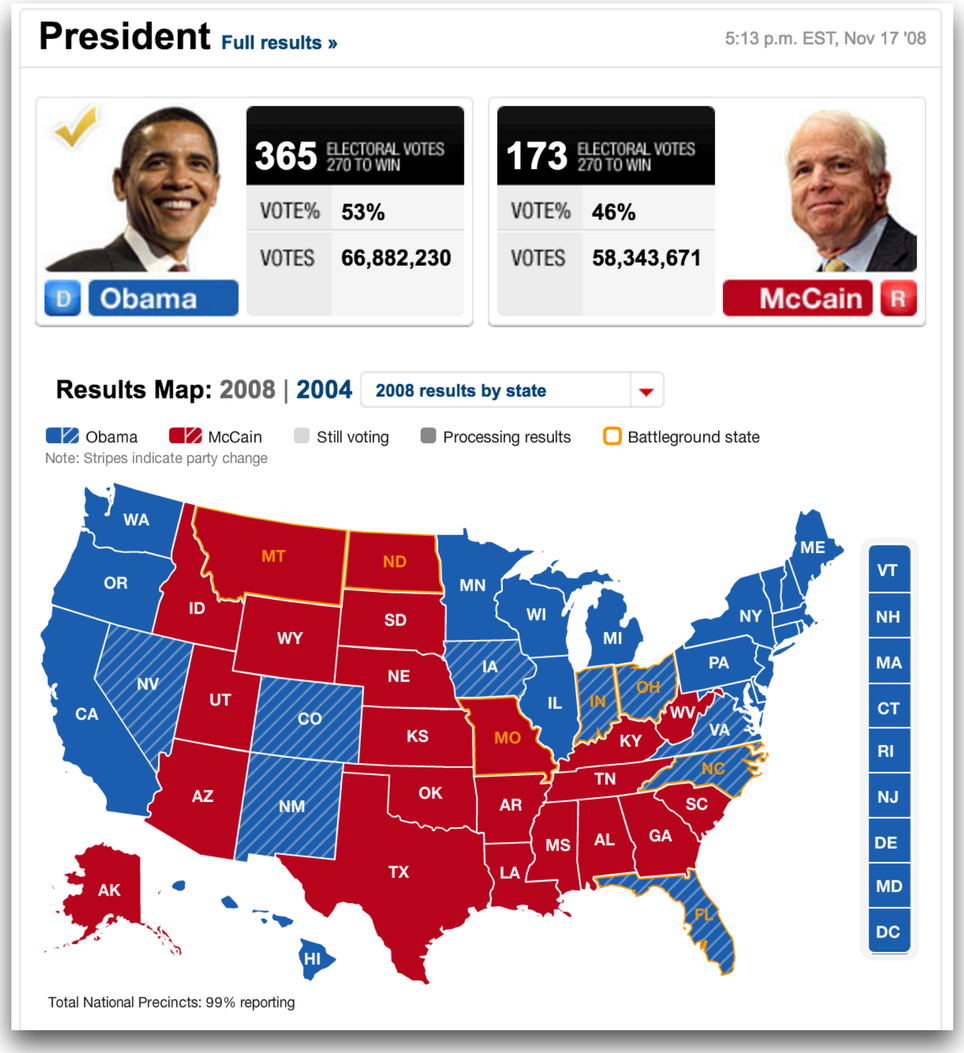
- Democrats regained control of the US House and Senate



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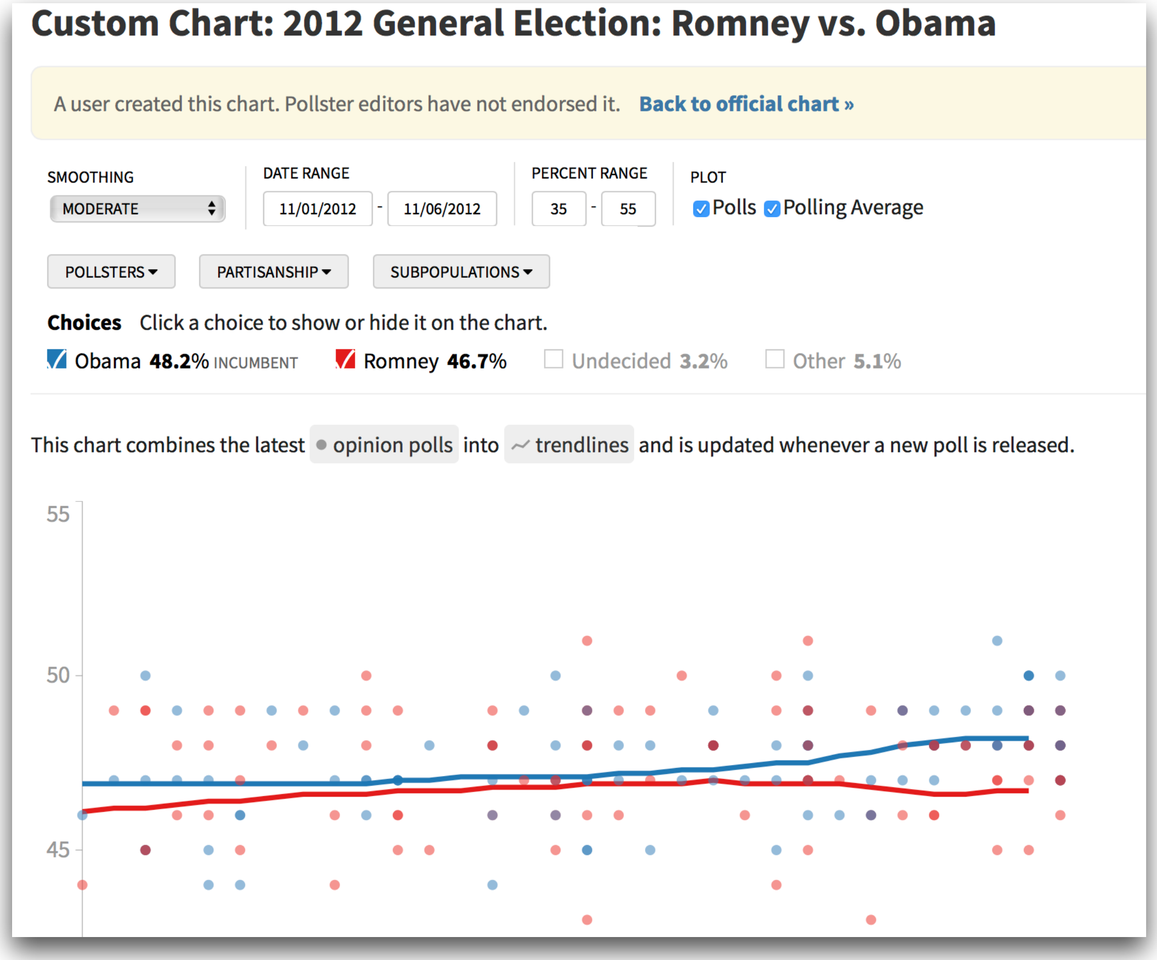
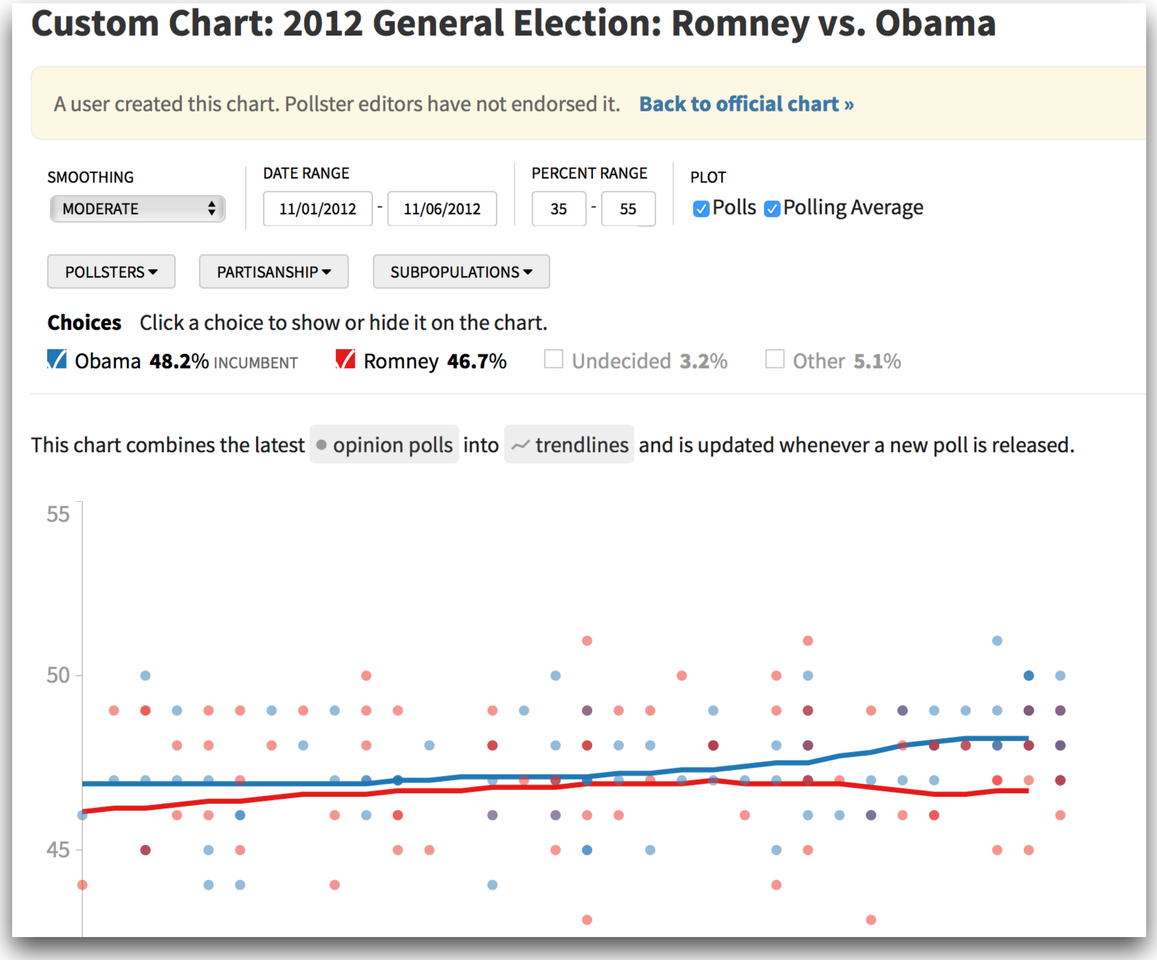


November 2012 Meta-Poll Tracking
Source: Pollster/Huffington Post

2012 President: Romney/Ryan vs. Obama/Biden

- Fiercely contested race through the primaries and the general



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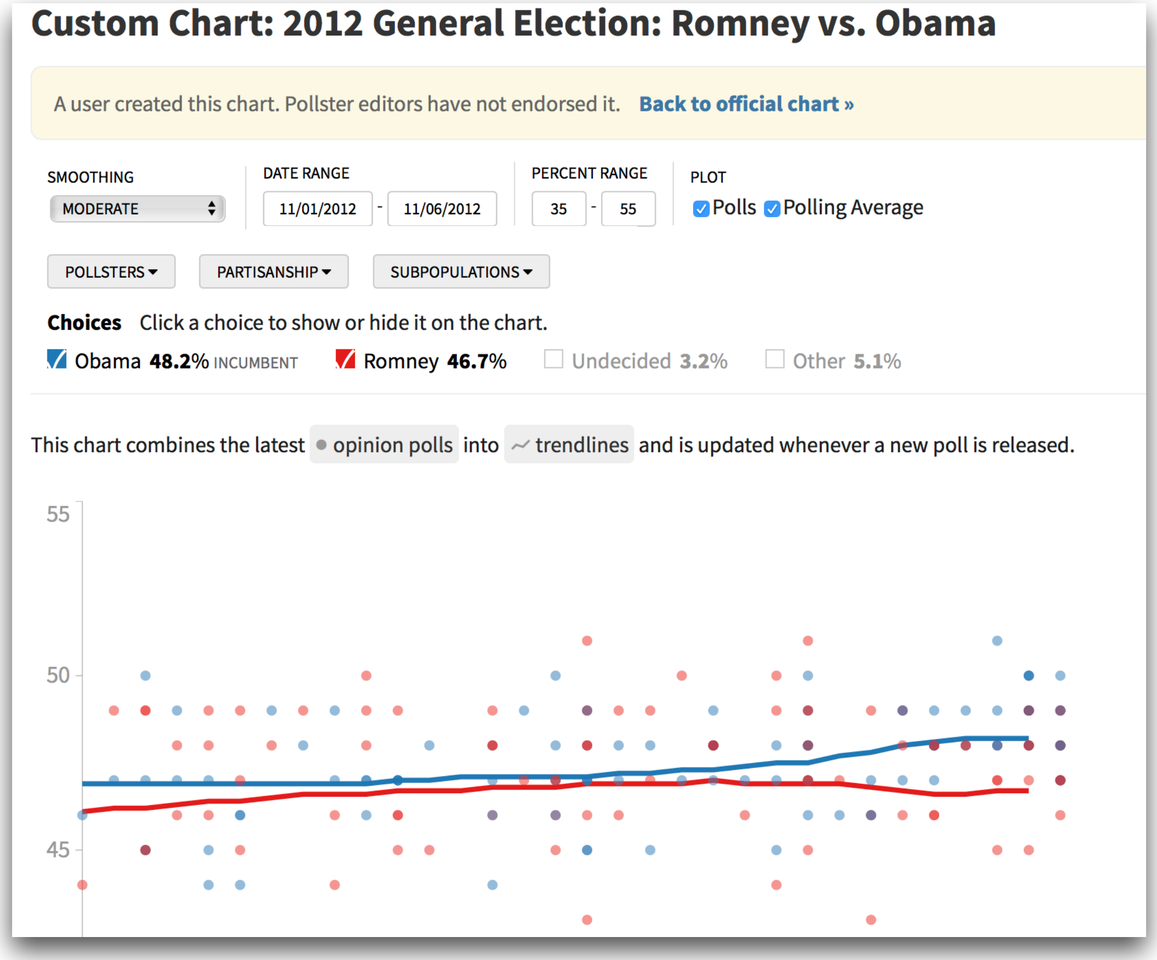

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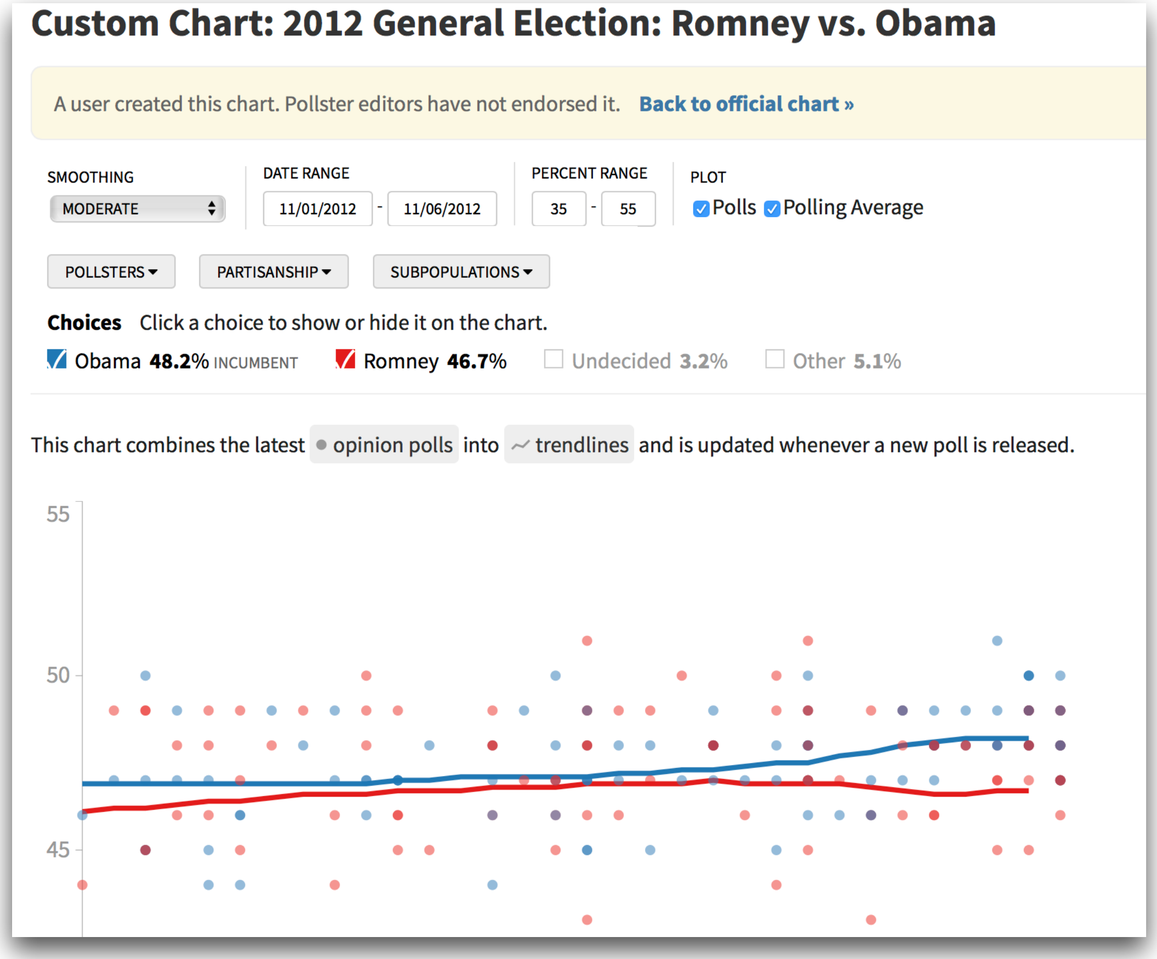
- All Election Day polls were within the “margin of error”



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What Changed in the 2012 Race

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- Technology had kept moving ahead at its inexorable rate, with two more doublings of price/performance since 2008
- Amazon Web Services was a thing

So Obama for America 2012 / DNC hires ***this*** guy

Harper Reed

Harper Reed

- B of A in Philosophy and CS, Cornell College, Mt. Vernon, Iowa — 2001

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- Various tech-related jobs, 2002-2005

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- Various tech-related jobs, 2002-2005
- Founded Threadless in 2005, a t-shirt printing company
- Hired in April 2011 by OFA as CTO based on his street cred and the fact that he was already in Chicago

Amazon Web Services

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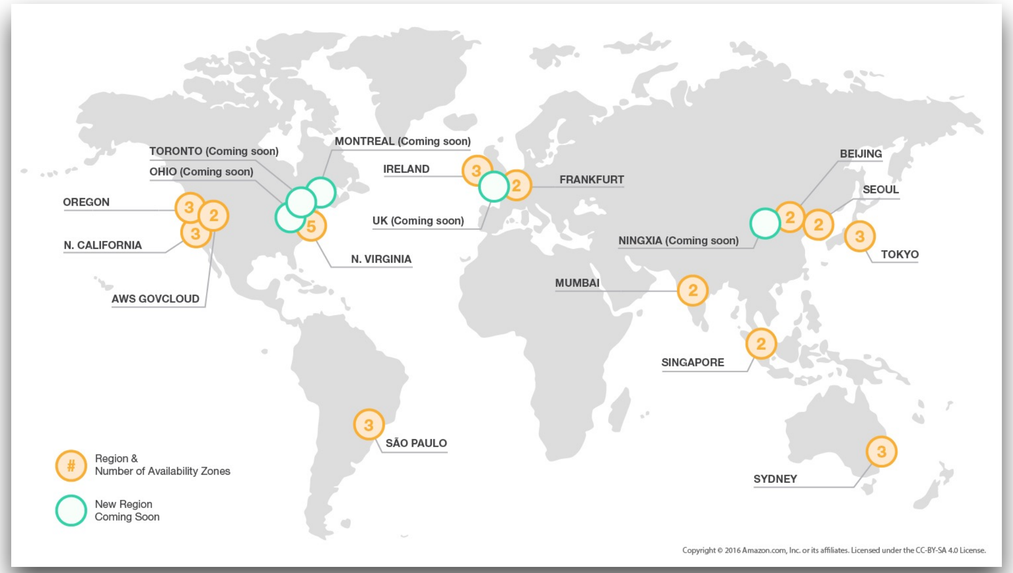

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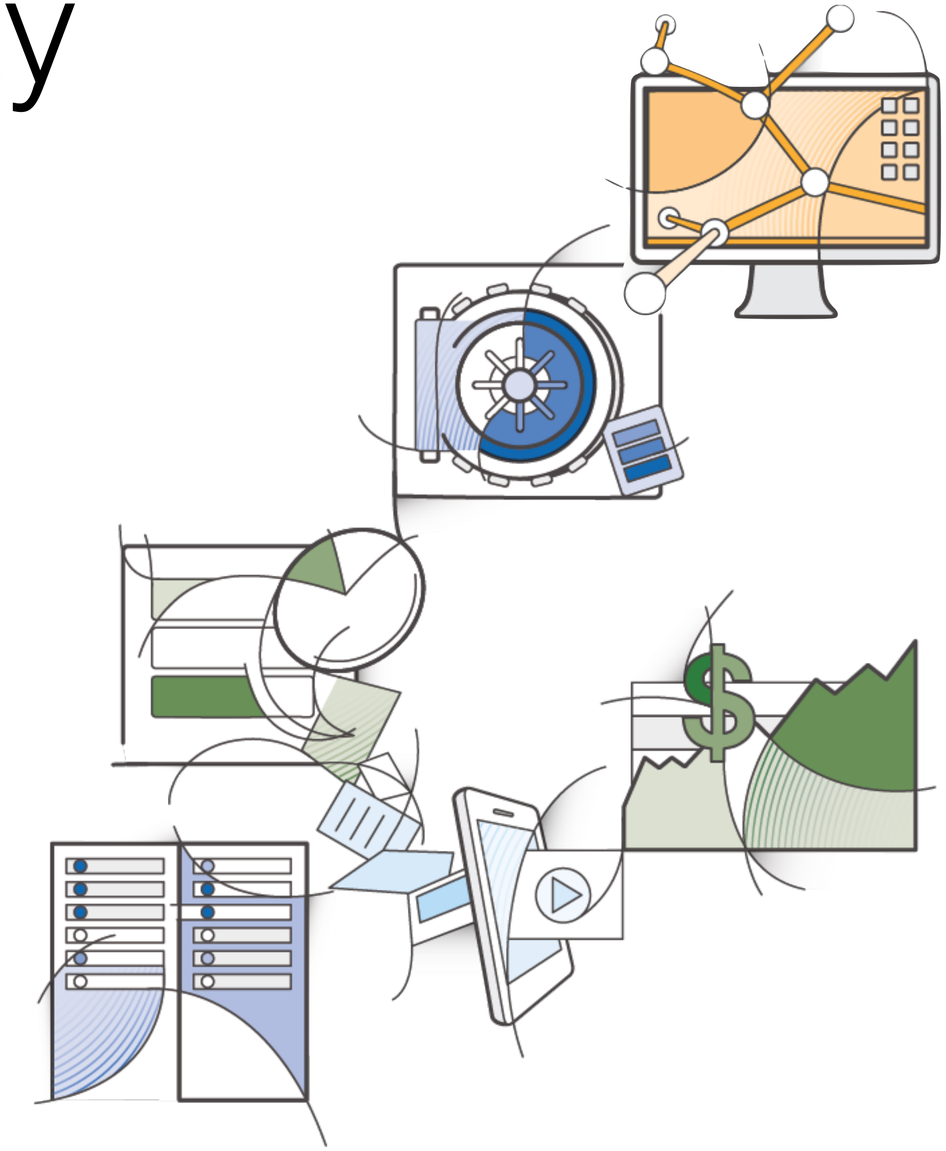
- By 2011, AWS was adding more capacity EACH DAY than was used to run ALL of amazon.com in 2007!

AWS Today



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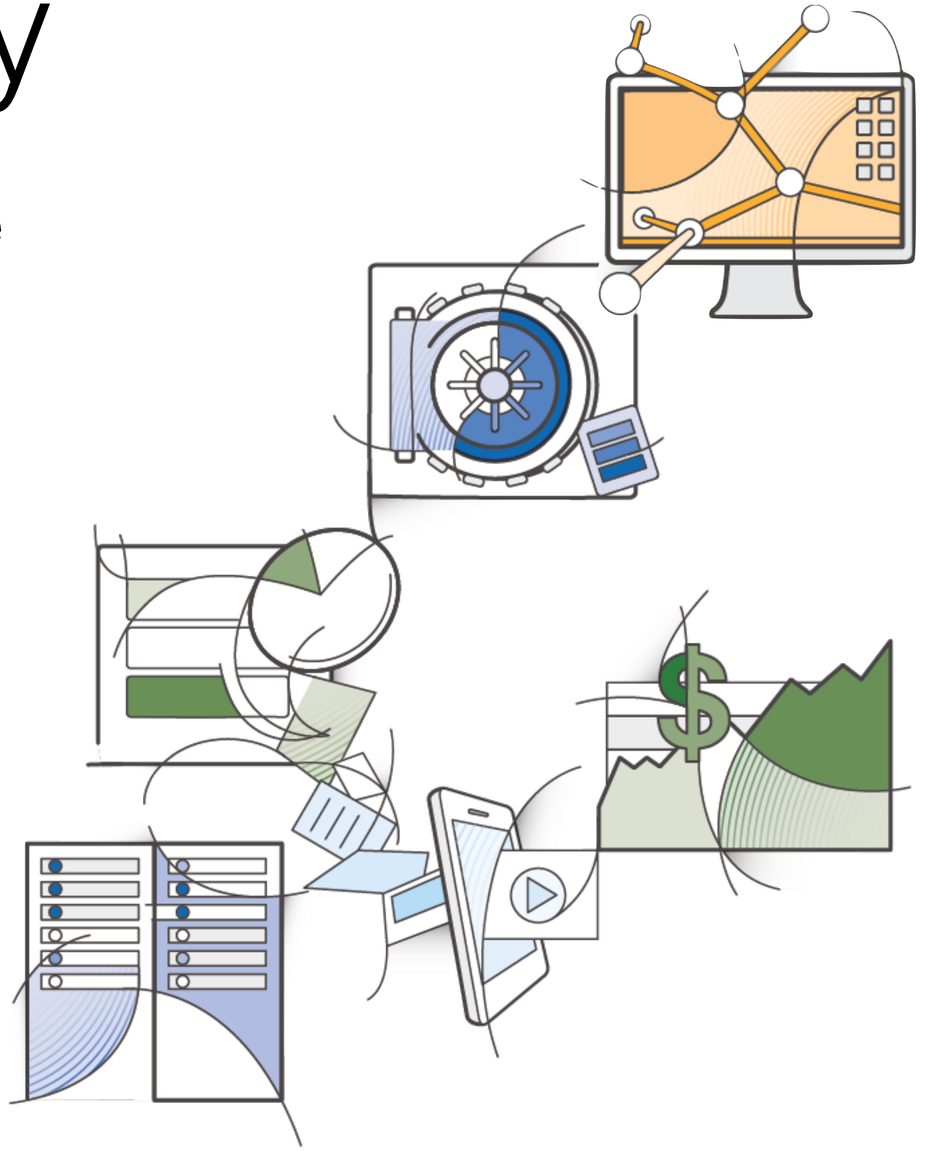

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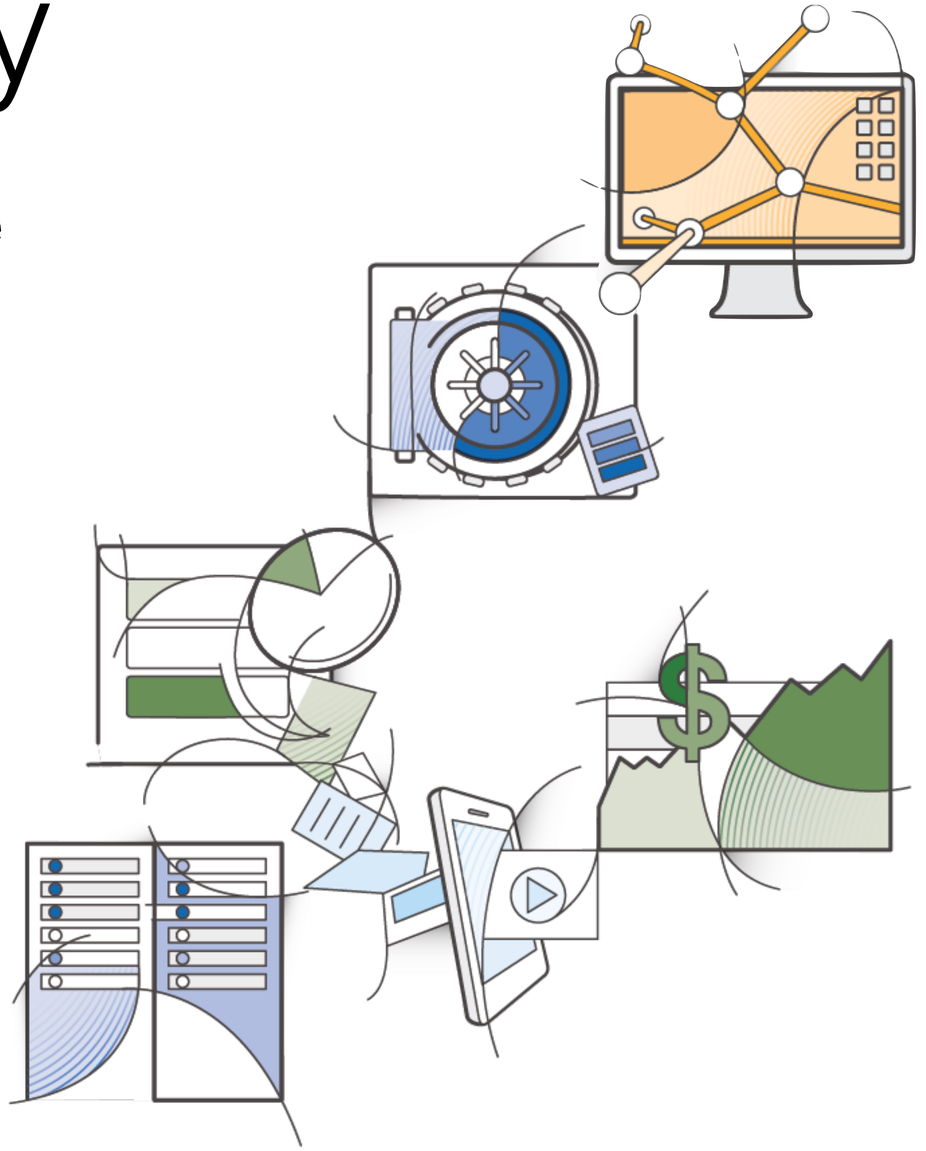

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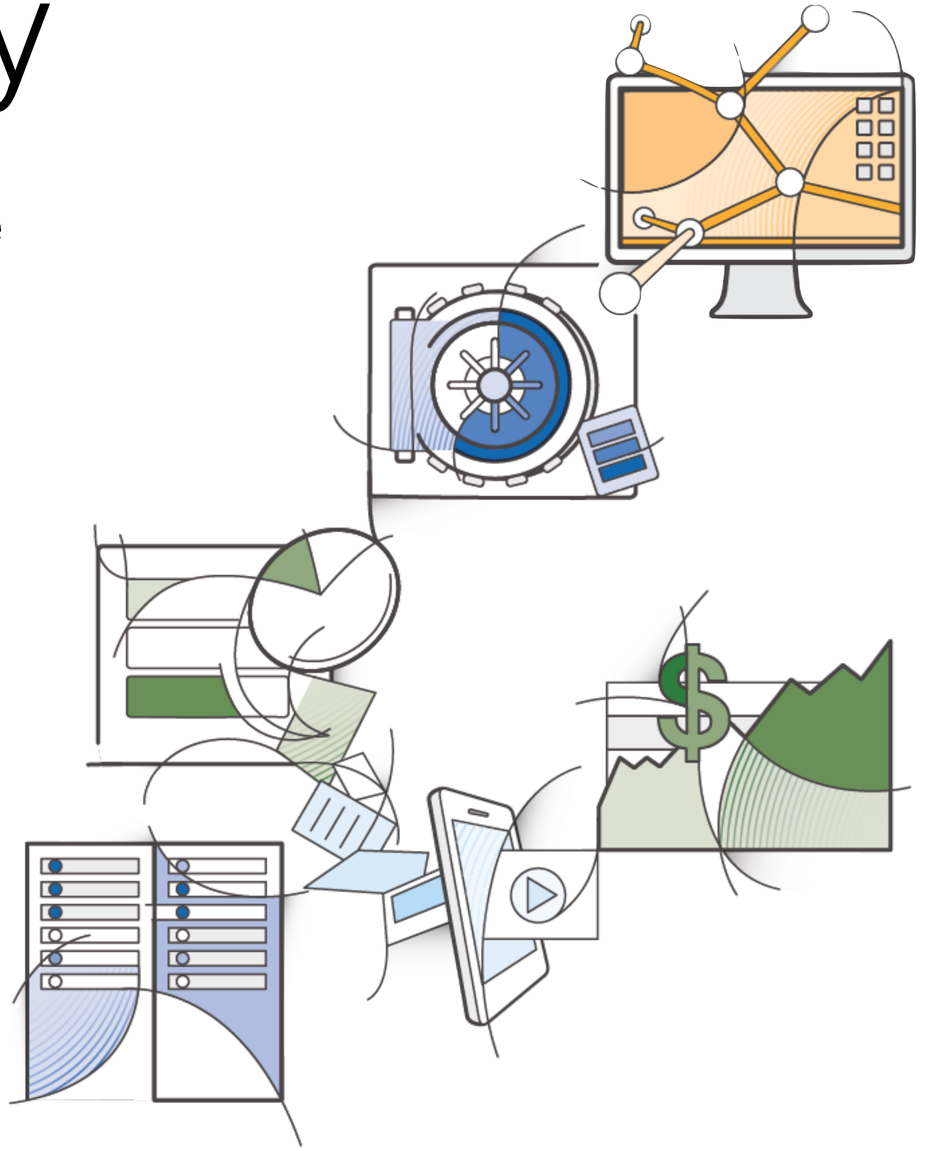

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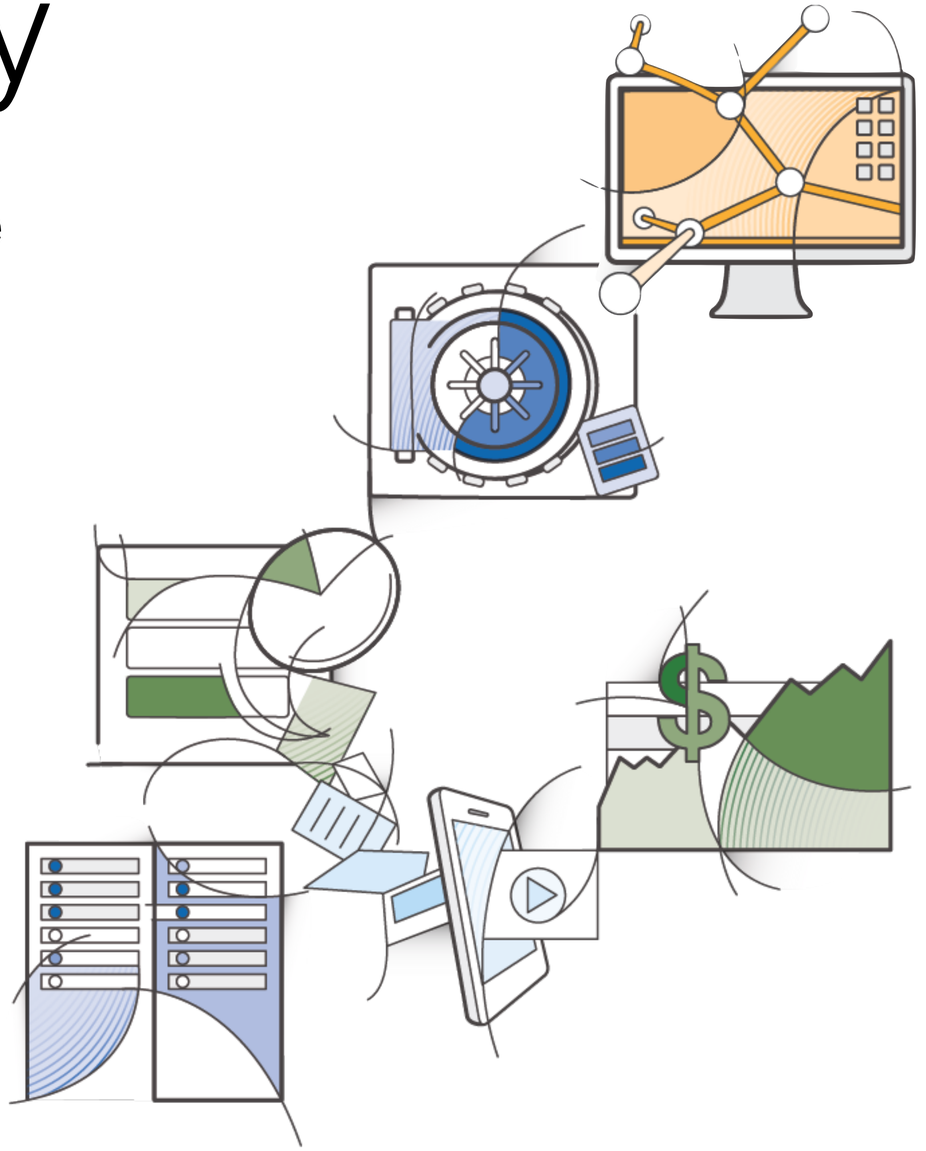


intuit
mlbam
yelp
NETFLIX
slack
airbnb
Expedia
LIONSGATE
lyft

OFA Technology Team

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- The GOP didn’t really have anything close to this sophisticated

GOP's Project Orca

Vote mobilization problems

Romney replaced the traditional GOTV system with the centralized Project Orca. The project failed to mobilize 40,000 volunteers in key states during the election day.[173]

source: Wikipedia,
Washington Post 11/16/12

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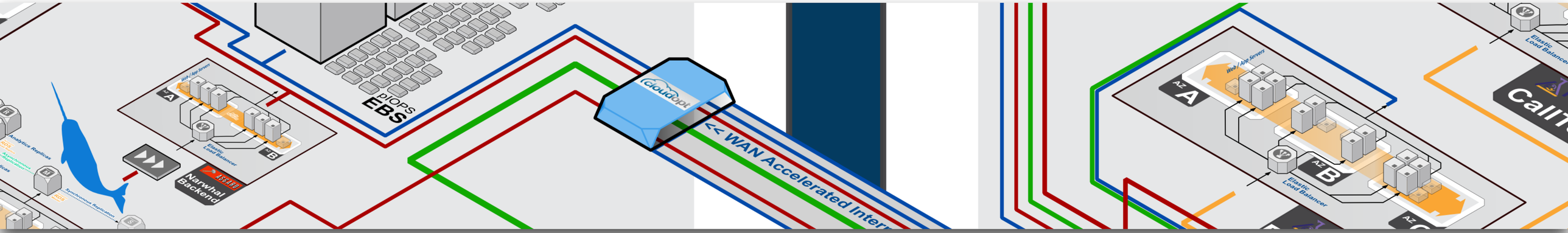
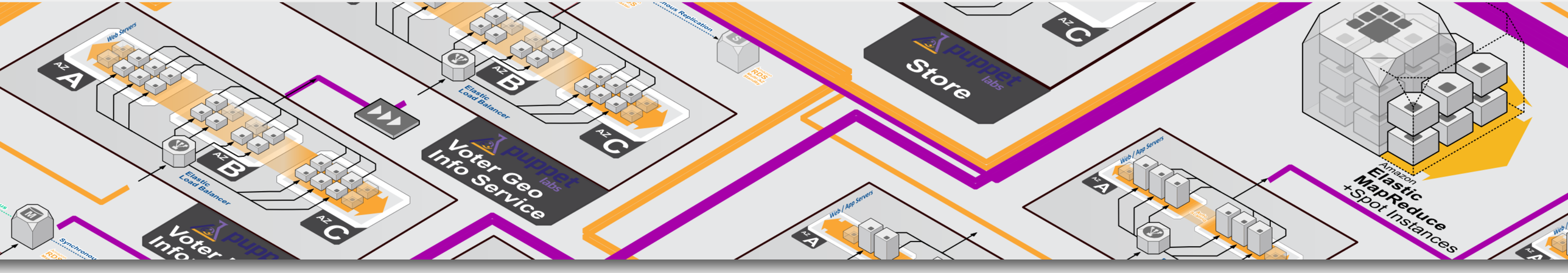
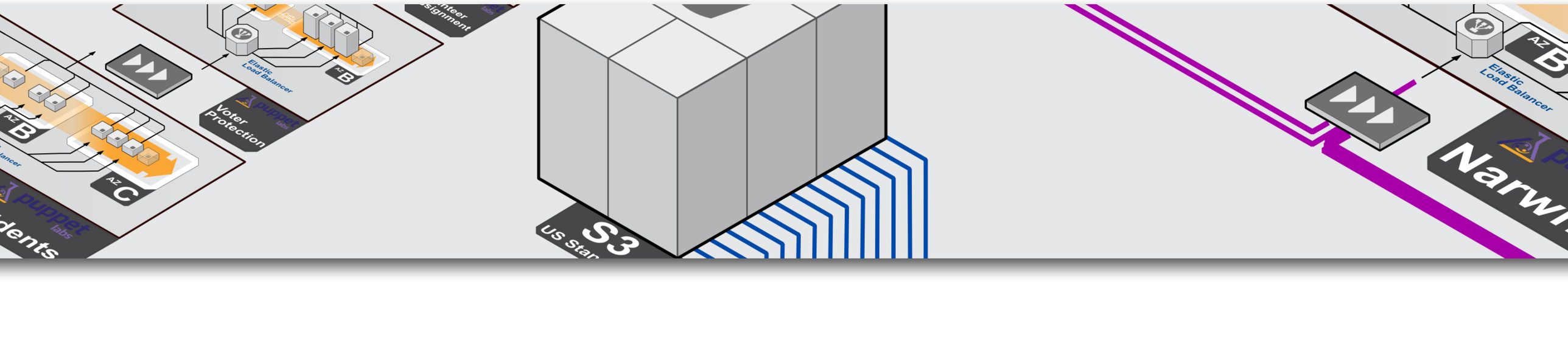

pIOPS
EBS
Web / App Servers
AZ A
AZ B
Elastic Load Balancer
Narwhal Backend
<< WAN Accelerated Inter
Analytics Replicas
Synchronous Replication


Web Servers
AZ A
AZ B
AZ C
Elastic Load Balancer
puppet labs
Voter Geo Info Service
puppet labs
Store
Web / App Servers
Amazon Elastic MapReduce +Spot Instances


AZ B
Elastic Load Balancer
Voter Protection
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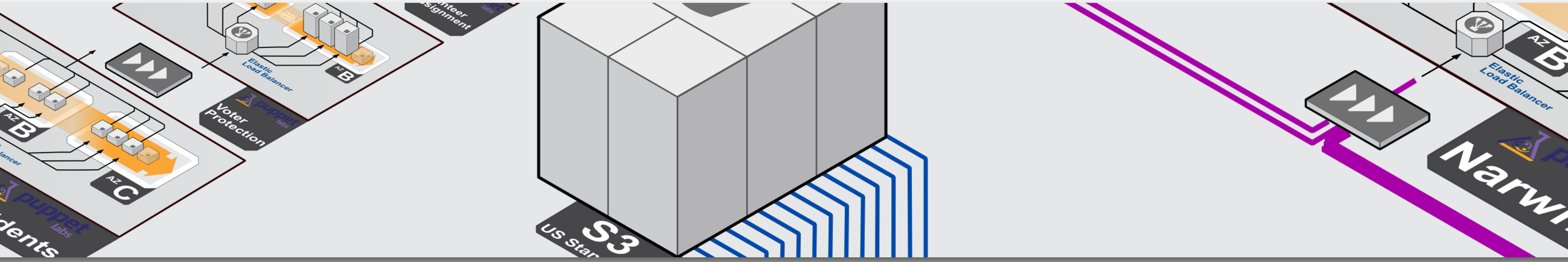
S3
Narwh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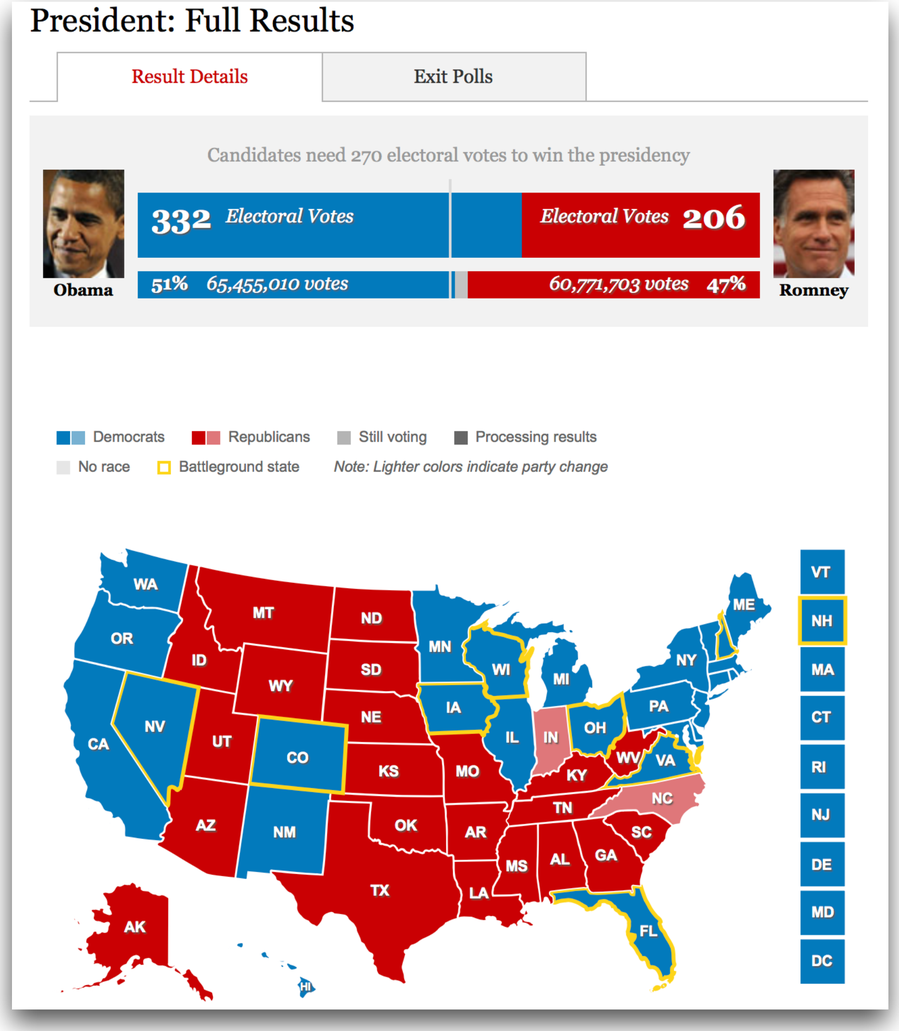
Result: Obama/Biden by 4%



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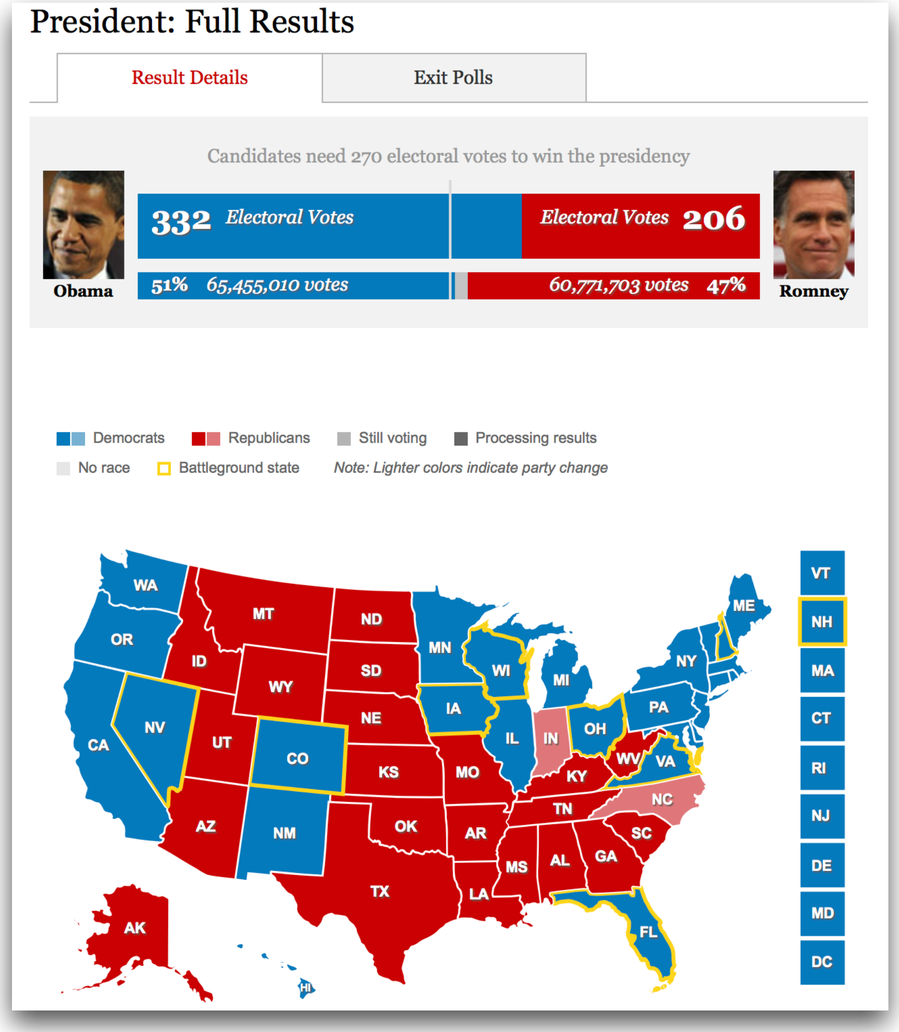

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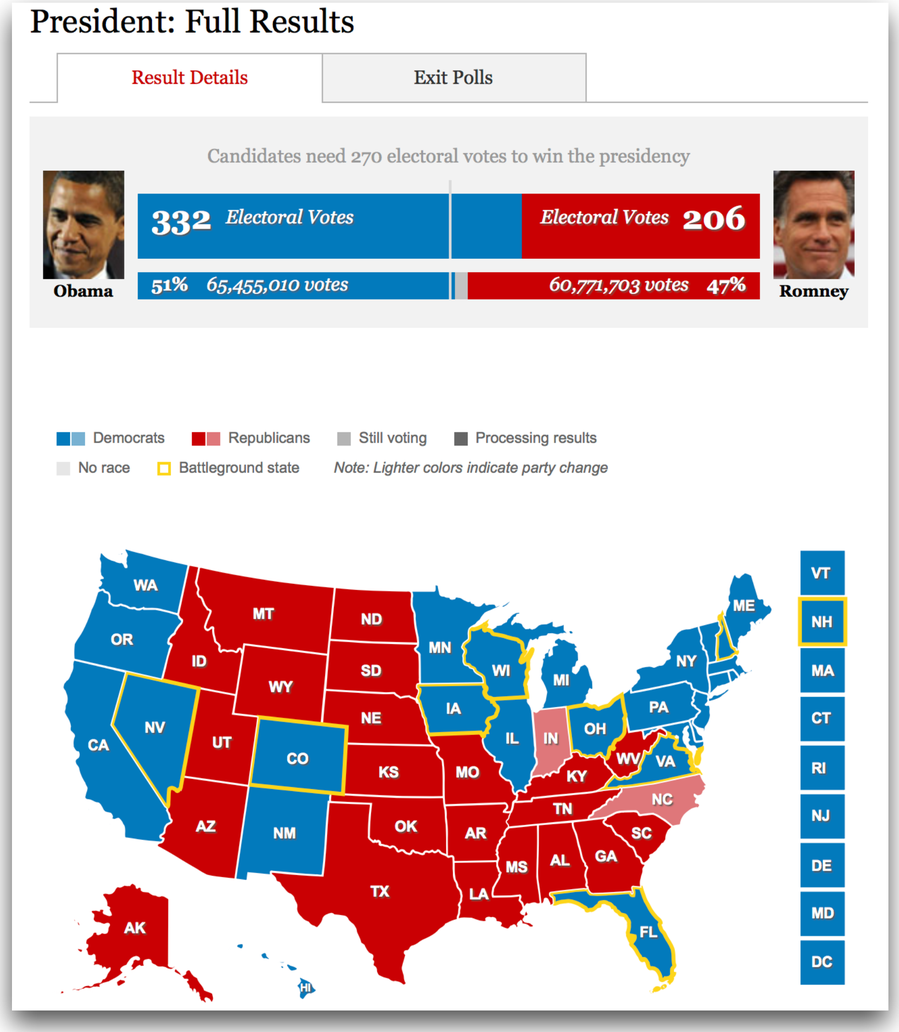
- Obama won 55% of women; 60% of the 18-29 age group; 76% of Hispanics; 93% of blacks; 81% of new voters; 69% of all CDs with population over 500,000; etc., etc.



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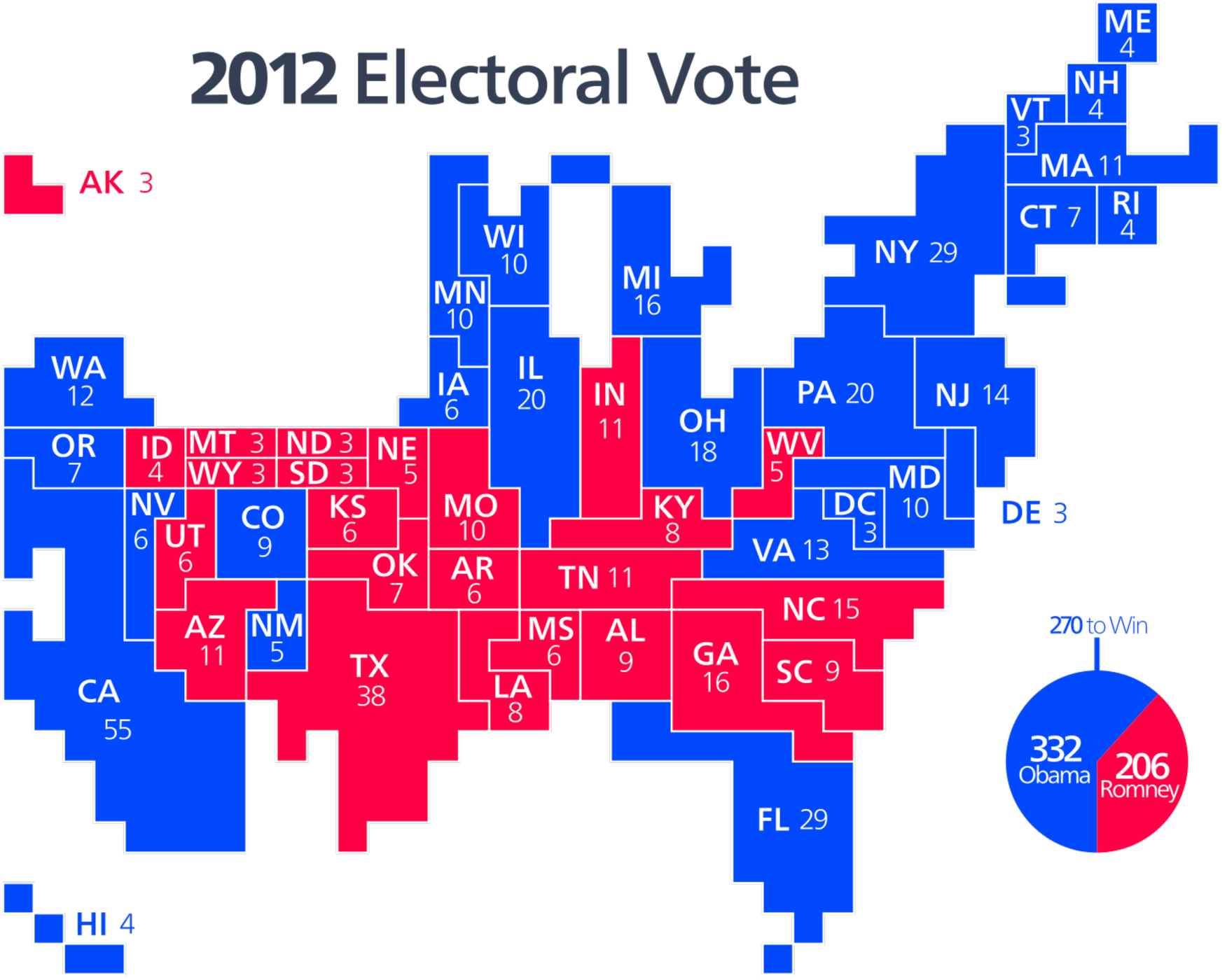
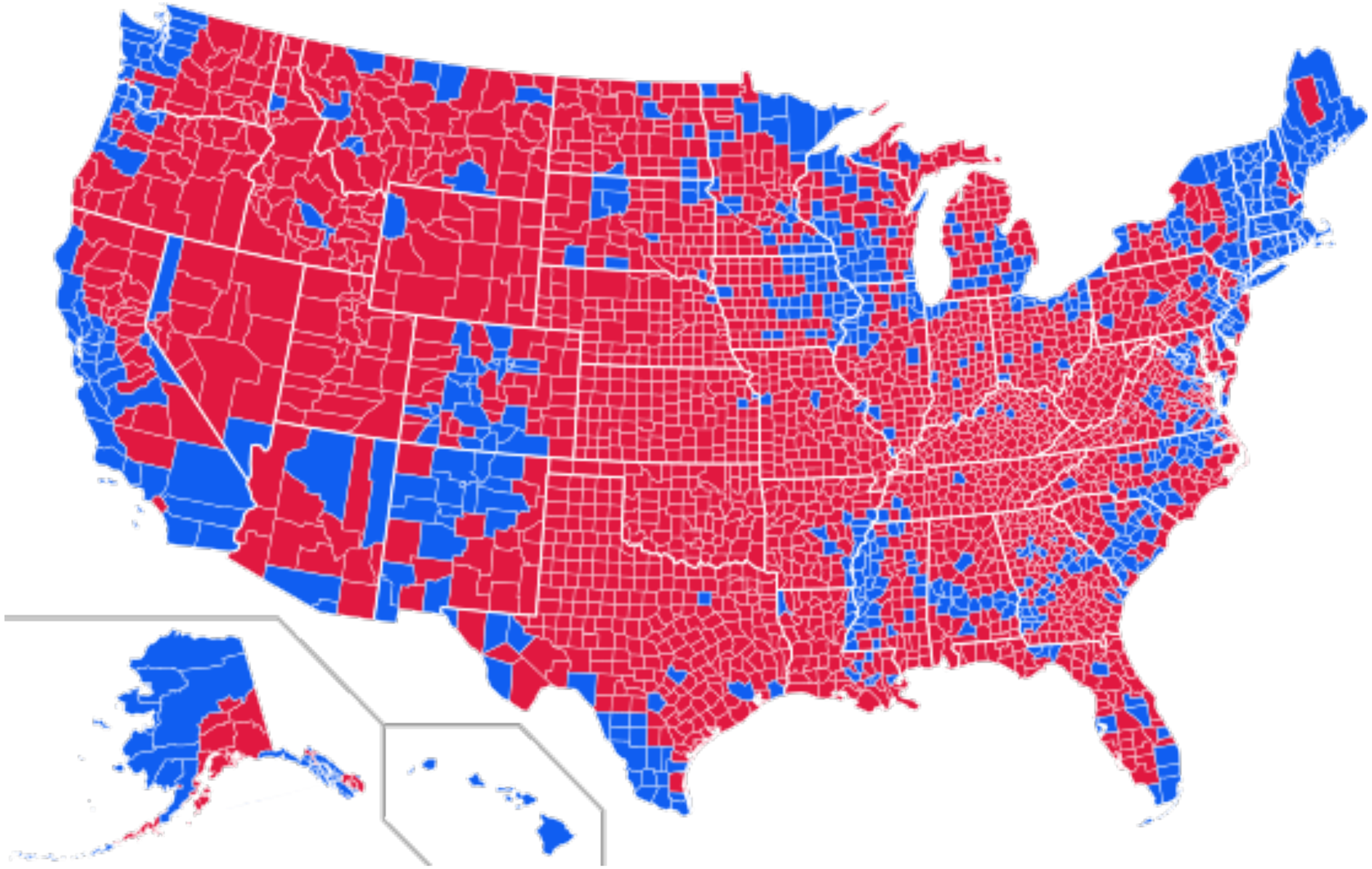
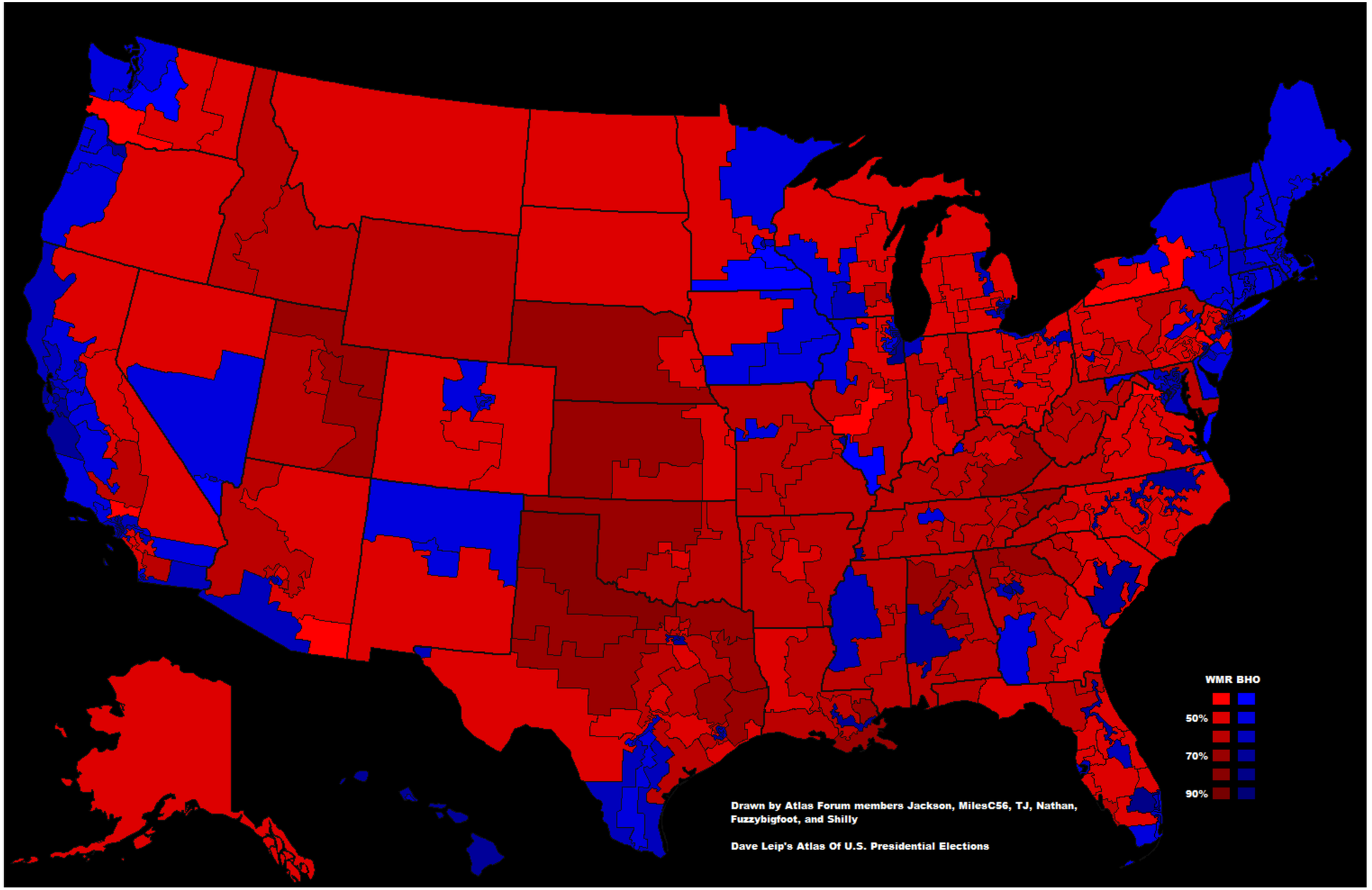
2012 Electoral Vote





2012 US Presidential Election Results by County

source: FEC.gov



2012 US Presidential Election Results by Congressional District

source: Atlas of US Presidential Elections

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- Do you think the GOP has learned from any of this?

Our Next Meeting

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Let’s Adjourn to Cheeks!