Financial Cybersecurity: Your Retirement Investments Aren't As Secure As You Thought

By: Cody L. Hofstetter





Disclaimer

- This presentation is for educational purposes only.
- I am not a lawyer even if I sound like one. Seek legal advice from someone who is.
- I am an IAR (Investment Adviser Representative) but will use the term RIA (Registered Investment Adviser) interchangeably. An RIA is the firm; an IAR is the person. You are not financial clients. All information is for educational purposes only and is not financial advice.





Overview

- Introduction
- Financial Crash Course
- Electric Vehicle Credits
- Financial Institution Security
- Are Your Investments Safe







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Red Eye Audience Participation







RIA vs Broker-Dealer

- RIAs have a fiduciary duty to clients
- Broker-Dealers (think stockbrokers) do not
- A fiduciary standard imposes ethical and legal guidelines on how RIAs manage client accounts; RIAs are legally required to act in client's best interest at all times while also disclosing any potential conflicts of interest





Something for Everyone

- Raise your hand if you have:
 - Cybersecurity or financial training relating to investments
 - Investment/retirement account a bank/advisor manages
 - 401(k), IRA, 403(b)/457 (govt employee), et cetera.
 - Investment/retirement account you manage yourself (Robinhood, Acorns, E-Trade, etc)
 - Checking or savings account
 - If you use the US dollar or any other currency





Fractional Lending and Currency Creation

- Created because not all deposits are needed at once
- US banks currently have a 1:10 ratio
- For every \$100 a bank can loan \$1000
- Every loan is a bank creating money out of thin air (in the form of debt) and increasing the money supply
- New currency creation causes net devaluation of existing currency in circulation and the reduction of its purchasing power
 - When total money supply is increased, dollars you have become less valuable





Bretton Woods Conference

- July 1944
- World War 2 still rages
- 730 delegates
- 44 allied nations
- 1 Mount Washington Hotel in Bretton Woods, New Hampshire.
- Creates the IMF (International Monetary Fund) and what would later become part of the World Bank.
- Secures America's future economic rise and domination on the global stage





Bretton Woods Conference

- One of IMF's main purposes is rebuilding after WW2
- Promote stability of exchange rates and financial flow of capital
 - Adjustable pegged FOREX (Foreign Exchange Market).
 FOREX is a decentralized market for trading currencies
 - Exchange is pegged to gold (sort of) or a gold convertible currency
 - 1oz gold (Troy ounce) = \$35 US
 - Harry Dexter White (senior US Treasury official) and genius behind the term "gold convertible currency"
 - America controls approximately 2/3rds of global gold supply and is only currency still directly convertible to gold





From Gold to Debt

- Triffin dilemma
 - Global reserve currency comes into question because country is running deficits to fill supply
 - As deficits accumulate, the reserve becomes less desirable and its position becomes threatened
- 1913 Federal Reserve Act citizens can no longer convert dollars to gold
- August 1971 Nixon has the US end gold to dollar convertibility for foreign governments
- US dollar becomes fiat currency (no intrinsic value)
 - Fiat is Latin for "let it be done" meaning an arbitrary order or decree
 - Faith based





Almighty Dollar

- USD remains primary reserve currency
 - US maintains a strong economy
 - Most traded currency. In 2019, 88% of global trade denominated in USD according to the Bank for International Settlements
 - Many other countries maintain vast reserves of USD because large percentages of commodities (gold, oil, food, etc) are priced in USD
- Countries who use USD as their currency
 - Ecuador, El Salvador, Zimbabwe
- Quasi-currency USD accepted for most transactions
 - Mexico, Canada, Belize, Costa Rica, the Caribbean Islands, and many more
- In Panama USD is legal tender alongside it's actual currency (pegged at \$1)





Inflation

- Inflation general increase in prices of goods and services
 - Calculated using the Consumer Price Index (CPI)
 - CPI measures average change in price of a basket of consumer goods and services
 - Reduces purchasing power
- US govt aims for 2-3% inflation annually
- Inflation rates (via US Labor Department's Bureau of Labor Statistics)
 - 2020 1.4%
 - 2021 7%
 - 2022 8%
- Your money is worth 1/6th less (16.4%) than 3 years ago





Almighty Dollar Inflation

- USD is a global reserve currency
- When the US govt increases its money supply and causes inflation, everyone who holds USD (including foreign countries) experience a devaluation
- In essence, every time the US govt prints money everyone in the world shares the additional burden
- Foreign countries can partially counteract this by adjusting their exchange rates in relation to the USD





Hot tips from an RIA; aka the most important slides by far

- Provide value one \$2000 mistake at a time
 - Without fail, almost all households make financial mistakes costing at least \$2k/yr or \$160k+ lifetime (extremely conservative estimate)
- Interest rates have been depressed near zero since 2007 but are increasing
- Savings accounts, money market accounts, and CDs are also increasing
- As of 2/22/23, average savings accounts pay 0.35% and a high yield money ma





Hot tips from an RIA; aka the most important slides by far

Account Balance			Bank APR (Annual Percentage Rate)			DPR (Daily Periodic Rate)	
Balance 1	\$11,400.00	Under 35	APR 1	0.35%		0.000959%	
Balance 2	\$57,200.00	Over 35	APR 2	4.55%		0.012466%	
Days in Year	Balance 1	Balance 1	Lifetime Difference (Balance 1)	Balance 2	Balance 2	Lifetime Difference (Balance 2)	
365	APR 1	APR 2		APR 1	APR 2		
Year 10 Interest	\$405.34	\$6,388.74	\$5,983.40	\$2,033.83	\$32,055.79	\$30,021.96	
Year 20 Interest	\$825.10	\$16,357.84	\$15,532.74	\$4,139.97	\$82,076.16	\$77,936.19	
Year 50 Interest	\$2,128.71	\$89,474.80	\$87,346.09	\$10,680.88	\$448,943.72	\$438,262.83	
Year 100 Interest	\$4,767.49	\$964,282.62	\$959,515.13	\$23,921.08	\$4,838,330.31	\$4,814,409.24	

\$2,000 - \$160,000+ value for free





- IRA (Inflation Reduction Act) signed into law August 16, 2022
 - https://www.irs.gov/credits-and-deductions-underthe-inflation-reduction-act-of-2022
- Clean Vehicle Credit (CVC)
- "Credit" is IRS parlance for a dollar to dollar tax reduction
 - CVC of \$100 will reduce a tax bill of \$1,000 to \$900
 - A CVC will not reduce a tax bill below \$0





- Clean Vehicle Credit (CVC) maximums
 - \$4,000 for Used
 - Credit equals 30% of sale price up to \$4,000
 - \$7,500 for New
 - \$2,917 for a battery capacity of at least 5 kilowatt hours (kWh)
 - Plus \$417 for each kWh of capacity over 5 kWh





- https://www.irs.gov/credits-deductions/used-cleanvehicle-credit
- Used purchase restrictions (not all listed, see link above):
 - Purchase price of EV or FCV (Fuel Cell Vehicle) is \$25,000 or less
 - Purchase must be made from a dealer (no private sales)
 - Vehicle bought for use and not resale
 - Not original owner





- Used purchase restrictions continued:
 - Not claimed as a dependent on another person's tax return
 - Not have claimed another used clean vehicle credit in the 3 years before the purchase date
 - Modified adjusted gross income (AGI) may not exceed:
 - \$150,000 for married filing jointly or a surviving spouse
 - \$112,500 for heads of households
 - \$75,000 for all other filers





- https://www.irs.gov/credits-deductions/credits-fornew-clean-vehicles-purchased-in-2023-or-after
- New purchase restrictions (not all listed, see link above):
 - Available to individuals and businesses
 - Purchased for own use and not for resale
 - Vehicle undergos final assembly in North America
 - Battery capacity of at least 7 kilowatt hours





- New purchase restrictions continued:
 - Vehicle manufacturer suggested retail price (MSRP) can't exceed:
 - \$80,000 for vans, sport utility vehicles, and pickup trucks
 - \$55,000 for other vehicles
 - Modified adjusted gross income (AGI) may not exceed:
 - \$300,000 for married filing jointly or a surviving spouse
 - \$225,000 for heads of households
 - \$150,000 for all other filers





Fed Energy Credits

- https://www.whitehouse.gov/cleanenergy/ simple interactive resource for available home credits
- Up to 30% credit applies to solar systems that are paired with battery storage as well as standalone battery storage installed without solar
- Up to 30% credit for energy efficient windows, heatpumps, or newer appliances
 - Up to \$1,200 each year for adding insulation or efficient windows and doors
 - Special credit up to \$2,000 for electric heat pumps that provide super-efficient heating and cooling





Fed Energy Credits

- All households up to \$4,000 while low income households could receive up to \$8,000
- \$150 for home energy audit conducted by inspector to determine best home improvement options
- Low to moderate income households can access 100% rebates for costs of installing electric appliances like a heat pump, water heater, and clothes dryer.





- 100% sales tax exemption on ZEV (Zero Emission Vehicle) purchase or lease but not hybrids
- Charge Up New Jersey
 - Up to \$4,000 for purchase or lease of new ZEVs including battery electric and plug-in hybrid electric
 - Vehicle MSRP under \$55,000
 - Purchase must be from eligible dealership and received at point of sale
 - \$250 rebate for purchase of eligible home charger





- HOV lane from Interchange 11 to 14 can be used regardless of how many passengers in vehicle
- NJ E-ZPass Green Pass Discount (must enroll vehicle, not automatic)
 - 10% discount off the full fare off-peak toll for New Jersey Turnpike and Garden State Parkway
 - Vehicles that obtain at least 45 miles per gallon and meet the California Super Ultra Low Emission Vehicle (SULEV) standard
- Numerous programs for businesses investing in EV infrastructure and adoption such as "It Pay\$ to Plug In"





Secure Passwords

- What makes up a secure passphrase?
- Entropy A measure of the disorder or randomness in a closed system
- Which is easier to remember?
 - 2}{Cfk's[j@%
 - The bank robber cow jumped over the moon with 100 bags full of \$\$\$
- Which is more secure?





KeePass



- A password manager stores all the passwords
- KeePassDroid Android
- MiniKeePass iOS
- Difference between LastPass and KeePass





Multi-factor Authentication (MFA)

- Knowledge
 Something you know
- InherenceSomething you are
- PossessionSomething you possess





MFA Examples

- PIN/Bank card
- Cell phone SMS/Password
- Fingerprint/Password/Iris scan
- FreeOTP soft token authenticator providing
 - TOTP (Time-based One Time Passwords)
 - HOTP (HMAC {Hash}-based One Time Passwords)
- Hardware devices (e.g. YubiKeys)





Financial Institution Security

- Ranges from excellent to laughable
- Most large banks somewhere in their organization use ancient decrepit payment processing and other systems
- NIST (National Institute of Standards and Technology) standards regarding passwords (changing passwords frequently is NOT secure)
- Limiting password length
- Offering subpar MFA, if at all





Financial Institution Security

- Most financial institutions use some form of MFA that's transparent to the user
 - Device identification
 - ISP
 - Location
 - Browser type/fingerprint
- Creates problems if users utilize a VPN, different device, or change their browser fingerprint to reduce tracking





Unique Browser Fingerprint

- Number of add-ons and extensions
- Types of add-ons and extensions
- Screen resolution
- Timezone
- Language
- Platform
- Fonts installed on the system
- Touch support





Financial Institution Security

- https://2fa.directory/us/
- https://2fa.directory/int/
- Github project recompiles list daily







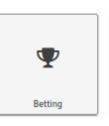
2FA Directory (United States)

List of websites and whether or not they support 2FA.

















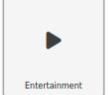
























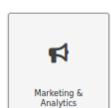








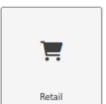




















Backup and Sync



Banking



Betting



Cloud Computing



Communication



Creativity

Banking	Docs	SMS	Phone Call	Email	Hardware token	Software token
Alliant Credit Union		~				
ally Ally Bank	=	~		~		
A Altra Federal Credit Union		~		~		
America First Credit Union	=	~		~		
American Express Savings	=	~	~	~		
Ameriprise Financial	=	~				
/// Andrews Federal Credit Union	=	~	~	~		
A Aspiration		~		~		
X Axos		~		~		
Bank of America		~		~	•	
Barclays US		~	~	~		
Bethpage Federal Credit Union		~		~		
Slack Hills Federal Credit Union		~	~	~		
😩 BMO Harris Bank		~	~	~		
Boeing Employee Credit Union		~				
Capital One	=	~		~		i
Charles Schwab	=	~			i	i
Chase	=	~	~	~		
chime Chime	=	~				
cíti Citibank		~	~			

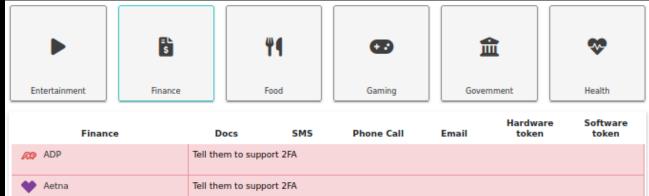




Banking	Docs	SMS	Phone Call	Email	Hardware token	Software token	
cíti Citibank	=	~	~				
Citizens Bank	Tell them to support 2FA						
▲ CommunityAmerica	8	~	~			~	
★ Credit Suisse	8					i	
/9F Desert Financial Credit Union	8	~		~			
Desjardins	8	~				i	
DCU Digital Federal Credit Union	8	~	~	~			
Discover	=	~	~	~			
Fairwinds	=	~	~	~			
Fifth Third Bank		~					
★ First Community Credit Union	=	~	~	~			
First Horizon	Tell them to sup	pport 2FA					
First Republic Bank	=	~	~	~			
First Tech Federal Credit Union	=	~	~	~	i	i	
FirstBank	Tell them to sup	pport 2FA					
★ HSBC US	Tell them to sup	pport 2FA					
Huntington National Bank	Tell them to sup	pport 2FA					
i IberiaBank	Tell them to sup	pport 2FA					
Jovia Financial	8	~	~			~	
♦ KeyBank	Tell them to sup	pport 2FA					
(Lake Michigan Credit Union	=					i	
LendingClub Bank	=	~	~	~			
LGE Community Credit Union	Tell them to support 2FA						
M&T M&T Bank	Tell them to support 2FA						
Marcus by Goldman Sachs		~		~			







	Finance	Docs	SMS	Phone Call	Email	Hardware token	Software token
RD	ADP	Tell them to support 2FA					
•	Aetna	Tell them to support 2FA					
*	AltoIRA	8					~
Α	Aspiration		~		~		
В	Bankrate	Tell them to supp	oort 2FA				
Ь	Bill 🛕	8	~	~			~
[]	Brex	=	~				~
-	Carta	=	~				~
C-	Concur	Tell them to support 2FA					
ck	Credit Karma (US)	8	~	~			
d.	Deel	e					~
Dext	Dext Prepare	8					~
	Envestnet MoneyGuide	Tell them to supp	oort 2FA				
E	Equifax	Tell them to supp	oort 2FA				
E	Exact Online	8					~
0	Expensify	8					~
A	FreeAgent	8					~
=	FreeTaxUSA	8	~	~	~		~
Ø	FreshBooks	Tell them to support 2FA					
#	Funding Circle	Tell them to support 2FA					
E	Geico	8	~		~		





	Finance	Docs	SMS	Phone Call	Email	Hardware token	Software token		
#	Funding Circle	Tell them to supp	Tell them to support 2FA						
Ü	Geico	8	~		~				
0	Gerber Life Insurance	Tell them to supp	Tell them to support 2FA						
7	Guideline	8					~		
g	Gusto	=	~	~			~		
HILD BLOCK	H&R Block		~		~		~		
•	Holded	e	~						
•	Intuit	8	~	~			~		
Ø	Intuit TurboTax	e	~	~			~		
1	Invoice2go	e			~				
%	Invoiced	e	~				i		
J	Justworks	8	~		~		~		
k	Kiva	Tell them to supp	oort 2FA						
	LendingClub	=			~				
-	LevelUp	Tell them to supp	oort 2FA						
0	M1 Finance	8					~		
	Metorik	=					~		
0	Mint 🛕	e	~	~			~		
N	NerdWallet	Tell them to supp	oort 2FA						
×	Nexonia	Tell them to supp	oort 2FA						
200	Northwestern Mutual	8	~	~			~		
P	Paychex		~	~					
\	Paycor	8	~	~	~		~		
8	Pocketsmith	8					~		
Q	Popmoney	Tell them to support 2FA							





Investing	Docs	SMS	Phone Call	Email	Hardware token	Software token
Morgan Stanley		~	~		•	~
Passfolio	e	~				~
Personal Capital	=	~	~	~		✓ i
Phoison Plus500		~	~			
Provident Metals	Tell them to supp	oort 2FA				
Prudential Financial		~				
Republic	=					~
Robinhood		~				TOTA
SAXO Saxo Bank						TOTP s
SigFig	Tell them to supp	oort 2FA				
S Stash	=	~	~	~		
S Stessa	=					~
T. Rowe Price	=	~	~	~		~
TD Ameritrade		~				





Financial Institution Security

- Securities and Exchange Commission (SEC) 2016 EDGAR data breach
 - Hackers stole thousands of corporate documents prior to their public release (such as earnings reports)
- Despite 8 years of warning from the GAO (Government Accountability Office)





Investment Advisors

- Following info is from NASSA (North American Securities Administrators Association) 2020 Investment Adviser Section Annual Report
- 2020 report includes info for 2019 (2020 is most recent report)





STATE-REGISTERED IA STATISTICS 2019



17,533

Total State-Registered Investment Advisers

Top 5 Most State-Registered IAs*

- 1. California 3,009 2. Texas 1,321
- 3. Florida 1,089
- 4. New York 845
- 5. Illinois 742 * As of 12/31/19

Top 5 State-Registered IAs Increase from 2018-2019

- 1. Texas 33 2. Nevada 13

- 3. Alabama 12 4. Pennsylvania 11
- 5. Montana 9

State-Registered IAs East/West of the Mississippi

331

Average State-

Registered

Investment Advisers per Jurisdiction



West 46%



East 54%

27,097

Total State-Registered Investment Advisers Registrations



QUICK FACTS

WORKFORCE

- 1-2 Person Shops: 80%
- Investment Adviser Representatives: 94%
- Insurance Agents: 51%
- Broker-Dealer Registered Reps: 38%



State-registered IAs are American Small Businesses.

State-registered advisers work in most every town in every state across the country, mostly in one-to-two person shops staffed with licensed professionals exclusively.

CLIENTS

- Retail Investors: 82%*
- High Net Worth Investors: 16%
- Other: 2%



TOP SERVICES

- Individual Portfolio Mgt.
- Financial Planning
- Selection of Other Advisers
- Portfolio Mgt. Business
- Pension Consulting



Managing Portfolios of Main Street Investors is Primary Focus of State-registered Investment Advisers.

State-registered advisers offer a variety of services, but their primary focus is individual portfolio management, which makes sense given their almost exclusive customer base of everyday Main Street Americans. The majority of state advisers also offer broader financial planning services in their practices.





In their examinations of state-registered investment advisers in 41 U.S. jurisdictions between January and June 2019, state examiners found deficiencies relating to cybersecurity in more than one-quarter (26%) of their examinations, up from 23% during the last series of coordinated examinations in 2017.

The top five cybersecurity-related deficiencies included: no testing of cybersecurity vulnerability, lack of procedures regarding securing or limiting access to devices, lack of procedures related to internet connectivity, weak or infrequently changed passwords, and no or inadequate cybersecurity insurance.





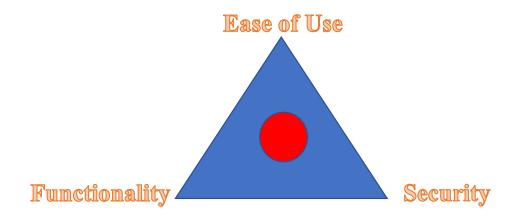
North American Securities Administrators Association Cybersecurity Checklist for Investment Advisers

Checklist Overview:

The NASAA Model Rule and corresponding <u>Cybersecurity Checklist for Investment Advisers</u> are designed to assist firms in securing their systems and the non-public information of their clients. This guidance is designed to assist firms in better understanding the meaning, intention, and connectivity of each of the sections of the NASAA Cybersecurity Checklist for Investment Advisers.

The importance of cybersecurity is consistently illustrated through the nearly daily occurrence of large-scale data breaches. As such, NASAA proactively created this guidance to assist firms in addressing cybersecurity risks, securing their information technology infrastructure, identifying the occurrence of a risk event, confronting a cybersecurity incident, and, then, quickly normalizing business operations.¹

To illustrate the importance of a balanced approach to cybersecurity, consider a common practice used by IT professionals known as the "Cybersecurity Triangle." As pictured below, the goal of any cybersecurity procedure is to appropriately balance confidentiality, integrity, and availability. For example, one would not want client PII so available for business use that it is no longer confidential, but one also would not want it so secure that it is more secure than the nuclear football. Thus, the "Cybersecurity triangle" assists in illustrating the balance required by information technology procedures.



To ensure a cybersecurity procedure appropriately balances this approach, one must ensure that it is in the center of this triangle (i.e. the red circle). Thus, after completing the NASAA Cybersecurity Checklist for Investment Advisers, the firm should use the "Cybersecurity Triangle" as guidance when addressing any identified deficiencies.





¹ NIST Framework

^{*}All photographs were obtained from pexels.com.

North American Securities Administrators Association

Cybersecurity Checklist for Investment Advisers

Identify Protect Detect Respond Recover

Identify: Risk Assessments & Management	YES	NO	N/A
Cybersecurity is included in the risk assessment.			
2. Risk assessments are conducted frequently. (e.g. annually, quarterly)			
3. The risk assessment includes an examination of the data its business collects and creates, where it is stored, and whether or not it is encrypted.			
4. Internal "insider" risk (e.g. disgruntled employees) and external risks are included in the risk assessment.	!		
5. The risk assessment includes relationships with third parties.			
 Adequate policies and procedures demonstrate expectations of employees regarding cybersecurity practices (e.g. frequent password changes, locking of devices, reporting of lost or stolen devices, etc.). 			
7. Primary and secondary person(s) are assigned as the central point of contact in the event of a cybersecurity incident.			
8. Specific roles and responsibilities are tasked to the primary and secondary person(s) regarding a cybersecurity incident.			
9. The firm has an inventory of all hardware and software.			
Protect: Use of Electronic Mail	YES	NO	N/A
1. Identifiable information of a client is transmitted via email.			





Definitions: Personal Identifying Information "PII" and Firm Sensitive Information — PII is any data that connects or identifies a specific person or business, which includes name, social security number, date and place of birth, mother's maiden name, or financial records including customer accounts and holding information. Firm Sensitive Information can include data such as contact information, email addresses, physical addresses, marketing plans, employee information, financial records, tax filings, etc. Firms can list data at a group level such as customer account information, or at the granular level such as social security number, customer name, date of birth, etc. (Please note: Definitions may vary by State.) ***Consider the questions below to determine where this information may be located within your firm and to address how it can be protected. Log the information into the chart below and maintain the inventory through routine internal cybersecurity risk assessments.

How is it captured? – What forms require the information? Is it included in multiple places? (i.e. Investment contracts, tax filings, custodian account forms)

Where is it physically/digitally located? – Where is the data stored? (i.e. files in a filing room, saved in a folder on the network drive, stored in a local file)

Who has access? – Who is able to view the data? (i.e. does the firm use the principle of least privilege?)

How is the data protected? – What steps does the firm take in order to secure the stored data? (i.e. encryption, password protected)

Is the data backed up? – Does the firm copy the data to be used in case of a cybersecurity incident? Does the firm initiate backups daily, weekly, annually?

Where are the backups located? - Does the firm store the backups on-site, offsite, in the cloud?

What is the confidential data?	How is it captured?	Where is it physically/digitally located?	Who has access?	How is the data protected?	Is the data backed up? If so, how often?	Where are the backups located?



Investment Advisors

- 80% are 1-2 person businesses
 - -19% have 3-10 employees
 - -99% have less than 10 employees
- Do you share account user/pass?
 - Now illegal
- Based on lax standards for large businesses, do you think small outfits have possibly even seen the checklist?





Are Your Investments Safe?

- NO...
- Inflation alone reduces value yearly
- Presentation disregards if your investments themselves perform poorly or not
- Lax (or non-existent) security implementation from large and small organizations



What To Do?

- Don't provide info you don't need to
 - Doctor's (dentists, etc) ask for SS# but don't need it
 - Get a passport card doesn't have certain information on it
- Check which of your financial institutions have enabled MFA (and enable it)
 - If they don't, consider asking them to or moving to a service that does
- Ask the small businesses being used if they adhere to the checklist





Desire to reciprocate value?

- Become one of my wealthy clients
- Pentest your organization
- Set up an enterprise talk
- Hire me for company staff training
- Take my enhanced privacy course





Thank you

Closing points to remember:

Just because you're paranoid doesn't mean they aren't after you

Use FOSS & tell everybody

Email:

Slides@SovereignCyberIndustries.com

