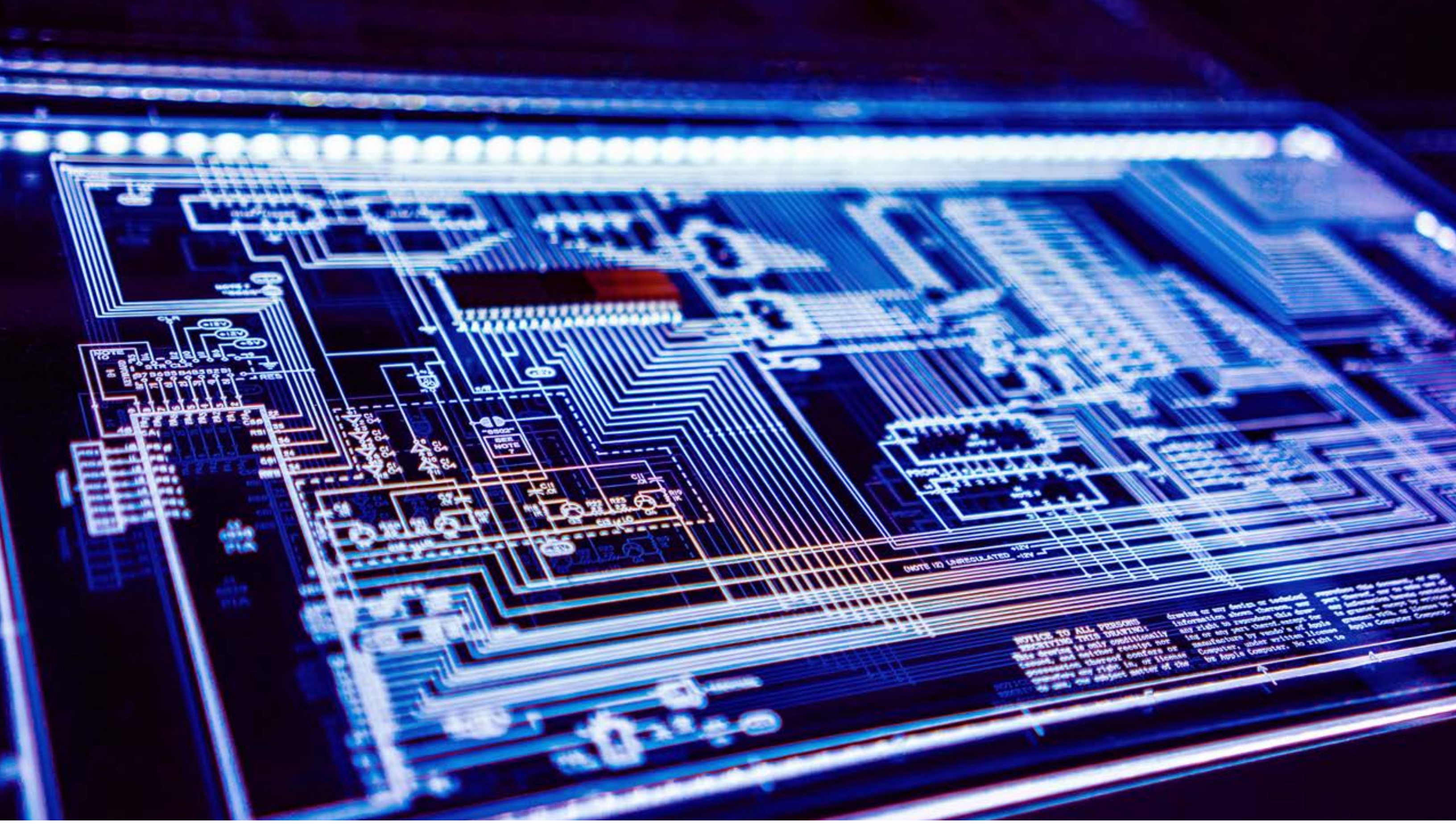

Know Your Cybersecurity Exposure

An Investor's Guide to Assessing Cybersecurity ETFs.

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I. Introduction: Cybersecurity as a 'Business Staple'

Cybersecurity is no longer just an I.T. issue—it has become a core business expense, essential for every organisation, similar to utilities or insurance. Just as consumer staples are necessary for everyday living, cybersecurity is now a 'business staple' in our increasingly connected world. Warren Buffett has noted, "*I think cyber is uncharted territory. It's going to get worse, not better*", highlighting the increasing urgency of protecting digital infrastructure (CNBC, 2018).

As cyber threats grow in complexity and frequency, the demand for effective solutions is surging, making cybersecurity a vital focus area for thematic investors. This guide is intended to help investors identify the key factors to be on the lookout for when evaluating and comparing cybersecurity ETFs, ensuring their investments are well-positioned for long-term success.

II. Evaluating Cybersecurity ETFs: What are the Key Metrics to Look Out for?

When considering a cybersecurity ETF, several factors can provide deeper insight into a fund's exposure to this theme. This section delves into some essential considerations.

A. Revenue Purity: Does your Fund Prioritise Thematic Purity?

Thematic purity refers to the percentage of a company's total revenue that comes directly from the specific theme—in this case, cybersecurity. It's a critical metric for thematic ETFs because it ensures that the companies included in the fund are truly focused on the relevant theme.

A cybersecurity ETF with a high revenue purity ensures that your investment is concentrated on companies deriving most of their revenue from providing cybersecurity products and services. This focused exposure helps to avoid companies that are only tangentially involved in the sector, reducing any dilution in the investment's thematic focus.

Many funds, especially those that rely on traditional market-cap weighting, give more weight to large companies that have only a marginal role in cybersecurity. For example, older legacy companies may still derive a substantial portion of their revenue from unrelated sectors, lowering the overall thematic purity.

→ **Why it matters**

To gain true exposure to cybersecurity growth, an ETF must prioritise revenue purity. Without this focus, your investment could be spread across companies that are not deeply embedded in the cybersecurity theme, potentially limiting the benefits from sector-specific growth.

Key challenges with other weighting methods include:

- **Equal Weighting Issues:** Equal weighting gives the same weight to all companies, regardless of their involvement in the theme. This can be argued to be a conviction-less approach, which is problematic when you're paying the cost of a thematic ETF. You'd expect that the ETF reflects some degree of expertise in the theme, even in an index fund. Additionally, this approach can create liquidity problems, as smaller companies receive the same allocation as larger ones, which may not reflect their relative importance or involvement in cybersecurity.

- **Market Cap Weighting Limitations:** Meanwhile, traditional market-cap-weighted approaches tend to prioritise today's largest companies, potentially overlooking emerging leaders. For instance, CrowdStrike, which IPO'd in June 2019, has quickly become one of the top players in cybersecurity, surpassing older companies like Check Point and Fortinet. A strict market-cap approach would have missed this growth, instead over-allocating to legacy companies like Cisco, Infosys and IBM, which are involved in other areas beyond cybersecurity and under-allocating to emerging winners. Additionally, market cap-weighted strategies that are exposed to a technology theme –such as cybersecurity– will likely be more similar to common benchmarks (such as the S&P 500 Index or Nasdaq 100 Index). In other words, the benefit of the intended exposure will be diluted based on an increased correlation to one's core portfolio.

An investment process that focuses on revenue purity therefore helps ensure that the ETF remains concentrated in companies best positioned to benefit from the growth of cybersecurity spending, providing more targeted exposure to the theme.

→ Our Approach

Our investment process is specifically designed to increase exposure to pureplay cybersecurity companies, ensuring that investors gain true thematic exposure.

Cybersecurity Score:
Each company in the investment universe is assigned a **cybersecurity score** based on the percentage of revenue it derives from cybersecurity products and services. This score plays a pivotal role in determining each company's weight in the index. Companies that derive 100% of their revenue from cybersecurity are assigned a score of 5, while those with less than 20% receive a score of 1.

The Cybersecurity Score Breakdown:
Companies with a cybersecurity score below 2 (i.e. generating less than 20% of their revenue from cybersecurity) are excluded from the portfolio. This ensures the portfolio is focused on companies with substantial exposure to the sector's growth potential. **Despite the 20% minimum cut-off, the portfolio's overall revenue purity has consistently remained above 95%**, as shown in the historical monthly purity figures in the table below.

5	100% of revenue from cybersecurity.
4	80–100% of revenue from cybersecurity.
3	50–80% of revenue from cybersecurity.
2	20–50% of revenue from cybersecurity.
1	Less than 20% of revenue from cybersecurity.

Date	Revenue Purity
30 August 2024	**95.96%**
31 July 2024	**95.45%**
28 June 2024	**95.85%**
31 May 2024	**95.34%**
30 April 2024	**95.41%**
31 Mars 2024	**95.32%**
29 February 2024	**95.80%**
31 January 2024	**95.49%**
31 December 2023	**95.03%**
30 November 2023	**95.80%**
31 October 2023	**95.49%**
29 September 2023	**95.03%**

Source: ARK Invest Europe. These are month-end revenue purity figures for the Rize Cybersecurity and Data Privacy UCITS ETF going back to the 29/09/2023.

Product and Service Groups:
Companies that generate at least 20% of their revenue from cybersecurity are divided into **product** and **service** groups, covering the full range of cybersecurity solutions. The total market cap of each group determines its overall weight in the index. Within each group, companies are further weighted by their cybersecurity score as a percentage of the total score for all companies in that group. This method ensures balanced exposure to both established leaders and high-growth innovators in hardware and software, while maintaining thematic purity.

Additionally, while the cybersecurity score guides the weightings, liquidity stress testing is performed at each semi-annual rebalance to ensure the portfolio's overall stability, as discussed in the next section.

B. Liquidity Profile: Does your Fund Prioritise Liquidity?

Ensuring a liquid portfolio is absolutely essential, regardless of whether an index employs equal weighting, market-cap weighting or revenue purity weighting. Investors should be vigilant about whether the index incorporates robust liquidity stress testing, which goes beyond simply having a minimum 3-month average daily volume cut-off—a standard rule in most indices. While a minimum average daily volume threshold is important, it is not as meaningful as a full liquidity stress test that evaluates how the portfolio would behave under significant market interest (or disinterest).

→ Our Approach

In our investment process, we implement a minimum 3-month average daily volume cut-off of $2 million. However, we also go a step further by scrutinising portfolio weights post-purity weighting against a **liquidity cap**. This is designed to ensure the portfolio can handle a hypothetical $100 million creation or redemption in a single day without exceeding 25% of the 3-month average daily volume for any individual stock.

If any stock theoretically exceeds 25% of its 3-month average daily volume during this liquidity stress test, its weight is adjusted down to its liquidity cap and the remaining weights are proportionally redistributed across the remaining constituents.

→ Performing Your Own Due Diligence

We encourage investors to query managers on how much can their fund handle in terms of inflows or outflows in a single day without exceeding 25% of the 3-month average daily volume of any single constituent? It is important to note that we have observed large AUM funds able to handle significantly less creation and redemption activity in a single day than much smaller AUM funds tracking the same theme. Therefore, AUM alone is not a reliable indicator for assessing liquidity.

C. ESG Integration: Does your Fund Prioritise ESG Standards and Thematic Integrity?

We have observed that ESG integration can help maintain both environmental, social and governance integrity and the thematic focus of an investment process by removing companies involved in controversial or unrelated industries, such as weapons manufacturing. This ensures that companies included in a fund not only align with the cybersecurity theme but also meet ESG standards. Competitor funds without ESG exclusions may include companies whose primary operations fall outside of cybersecurity, weakening their thematic focus.

→ Our Approach

Our ESG exclusions serve a dual purpose. First, they reflect our commitment to ESG standards by excluding companies engaged in controversial activities, such as weapons manufacturing. Second, these exclusions strengthen the fund's thematic focus by removing companies not primarily centred on cybersecurity. For example, companies like Elbit, L3Harris and Northrop Grumman derive less than 20% of their revenue from cybersecurity products and services, with a significant portion of their business focused on defense technology, which dilutes their relevance to the cybersecurity theme. By excluding such companies, we ensure the portfolio is concentrated on businesses deriving a substantial portion of their revenue from cybersecurity. In other words, this approach aligns with our clients' values and seeks to further enhance thematic purity.

ESG Exclusions and Purity:

- ESG Perspective: Companies involved in controversial activities are excluded due to their misalignment with our ESG principles and the cybersecurity theme.
- Purity Perspective: Many of these companies would not pass our revenue purity screen, as they are not cybersecurity pure plays. We focus on companies that generate significant revenue from cybersecurity and data privacy to ensure thematic integrity.

For more details on excluded companies, refer to our ESG exclusion table below.

Companies	Reason for Exclusion	Cybersecurity Score	Revenue Purity
BAE Systems	Controversial weapons, Weapons, DOD 100 Contractors	1	0-19%*
Elbit Systems	Weapons	1	0-19%*
L3Harris Technologies	Controversial weapons, Weapons, International Norms violations, DOD 100 Contractors	1	0-19%*
Leidos Holdings	Controversial weapons, Weapons, DOD 100 Contractors	1	0-19%*
Leonardo	Controversial weapons, Weapons, DOD 100 Contractors	1	0-19%*
LIG Nex1 Co	Weapons	1	0-19%*
Lockheed Martin	Controversial weapons, Weapons, DOD 100 Contractors	1	0-19%*
Northrop Grumman	Controversial weapons, Weapons, International Norms violations, DOD 100 Contractors	1	0-19%*
Qinetiq Group	Weapons	1	0-19%*
Saab Aktiebolag	Weapons	1	0-19%*
Thales	Controversial weapons, Weapons	1	0-19%*
Accenture	International Norms violations	1	0-19%*
IBM	International Norms violations, DOD 100 Contractors	1	0-19%*
Ltimindtree Limited	Controversial Weapons	1	0-19%*
Booz Allen Hamilton	DOD 100 Contractors	1	0-19%*
Parsons Corp	DOD 100 Contractors	1	0-19%*
SAIC Corp	DOD 100 Contractors	1	0-19%*
CACI International	DOD 100 Contractors	1	0-19%*
Microsoft	DOD 100 Contractors	1	0-19%*
Larsen and Toubro	Controversial Weapons	1	0-19%*

*Source: ARK Invest Europe. These are the excluded companies from the Rize Cybersecurity and Data Privacy UCITS ETF. as of the June 2024 fund rebalance. *The company has peripheral exposure to the theme, deriving less than 20% of its revenue from it or lacks specific revenue or operating profit data to verify the extent to which it is benefiting from the theme.*

D. Leadership Capture: Is your Fund Positioned to Capture Shifts in Sector Dominance?

A key objective when investing in cybersecurity is gaining exposure to companies with the most direct involvement in the sector's growth. Revenue purity weighting achieves this by focusing primarily on mid- to medium-large cap companies—those typically more focused on cybersecurity innovation than their larger counterparts. In contrast, equal-weighted ETFs allocate uniformly across small, mid and large caps, which can dilute exposure to core players. Meanwhile, market-cap-weighted ETFs often overallocate to large-cap companies, which may not be the most innovative or growth-driven in this fast-evolving industry.

→ Why it matters

Investors should note that true growth in the cybersecurity sector has historically come from emerging leaders, often from the mid- to medium-large cap category. These companies are agile enough to adapt to the fast-paced cybersecurity landscape, providing stronger exposure to cybersecurity-driven revenues. In fact, our ETF maintains approximately 68% exposure to companies with market caps between $1-20 billion, where the most significant growth potential lies (Bloomberg, as of close 07 September 2024). This exposure aligns with our objective of offering pure exposure to the growth of the cybersecurity theme.

The leadership within cybersecurity has shifted dramatically over the past two decades and this pattern is likely to continue. Here's a timeline illustrating these leadership shifts:

- In 2008, Symantec and McAfee were the undisputed leaders in cybersecurity, dominating the market with antivirus and endpoint protection solutions. Symantec was valued at around $13 billion and McAfee, before being acquired by Intel in 2011, was a key player. However, as the threat landscape evolved and the industry shifted toward network and cloud security, these companies struggled to maintain their leadership positions.

- By 2013, Palo Alto Networks had emerged as a new leader, driven by its innovative next-generation firewall technology. Palo Alto's market cap grew rapidly from around $2.8 billion at the time of its IPO in 2012 to over $12-15 billion by 2015, positioning it as a top player in the industry. Meanwhile, Symantec's market dominance began to wane as it failed to adapt quickly to the shift toward network security and advanced threat protection.

- In 2018, Palo Alto Networks and Fortinet were solidifying their positions as industry leaders, while newer companies like CrowdStrike were gaining attention for their innovative approaches to cybersecurity. CrowdStrike, founded in 2011, had not yet gone public but was already recognised as a significant player in endpoint protection. By the time of its IPO in June 2019, CrowdStrike was valued at nearly $6.7 billion, and it quickly became a leader in endpoint protection and threat intelligence. Its rapid rise continued, with a market cap exceeding $50 billion by the end of 2021, showcasing how quickly new entrants can disrupt the market.

- In 2023, the cybersecurity landscape saw yet another shift, with companies like Zscaler and Fortinet rising further. Zscaler, with its cloud-native security platform, grew its market cap from around $4-5 billion in 2018 to over $18-20 billion by 2023. Fortinet, initially known for its high-performance firewalls, expanded into broader security solutions, pushing its market cap to around $45-50 billion by 2023.

- **Looking forward**, AI is likely to reshape the entire cybersecurity industry. A concentrated bet on today's large-cap leaders might prove to be right, but it could also be only half-right—or even wrong. The winners in 2028 could very well be deeply undervalued names in the mid- to medium-large cap segment—an area where our ETF is focused, drawing on a decade of experience investing in this industry. **SentinelOne**, for instance, is a prime example of a company that is challenging even the most recently established leaders like **CrowdStrike** and **Zscaler**. SentinelOne's autonomous AI-driven platform offers unparalleled speed and precision in threat detection and response, with a strong emphasis on automation that reduces reliance on human intervention. This not only sets a new standard for endpoint security but also positions SentinelOne as a formidable competitor in a space dominated by larger, more established players. Its ability to provide real-time visibility across all devices and networks, combined with advanced AI algorithms, has allowed it to capture significant market share rapidly. Investing in companies like SentinelOne, which are at the forefront of AI-driven cybersecurity innovation, ensures that our ETF remains well-positioned to benefit from the most promising growth opportunities in the industry.

→ Our Approach

Our ETF tilts towards companies with the highest revenue purity in cybersecurity, naturally leading to greater exposure to mid to medium-large cap companies. These companies often represent the next wave of industry leaders, driving innovation and growth in a sector known for rapid shifts.

Below are the current **top 10 holdings** in our ETF, showcasing our commitment to identifying the key players leading the cybersecurity space:

Top 10 Holdings	ISIN	Weight
Trend Micro	JP3637300009	6.45%
Sentinelone	US81730H1095	6.35%
Fortinet	US34959E1091	6.06%
Cloudflare	US18915M1071	5.29%
Gen Digital	US6687711084	5.01%
Verisign	US92343E1029	4.85%
Rapid7	US7534221046	4.59%
Varonis Systems	US9222801022	4.57%
Check Point Software	IL0010824113	4.47%
Qualys	US74758T3032	4.34%
		51.98%

Source: ARK Invest Europe. The percentages represent the weights of the top 10 holdings for the Rize Cybersecurity and Data Privacy UCITS ETF as of close 07 September 2024.

It's also worth noting that we're shocked to see that other cybersecurity ETFs still include companies like Cisco. Cisco's share price has stagnated over the past five years, reflecting its struggles to remain a leader in the fast-evolving cybersecurity landscape. Our strategy avoids such complacency by focusing on companies that are truly driving innovation and growth in the sector.

These historical shifts illustrate that today's large-cap leaders may not necessarily hold their positions in the future. Market-cap weighted strategies are inherently backwards looking. Concentrating solely on large-cap companies bets on their continued dominance, but this approach carries risks, especially as AI begins to reshape the industry. By focusing on revenue purity and tilting towards mid to medium-large cap companies, our ETF is strategically positioned to capture the next generation of cybersecurity leaders, balancing stability with significant growth potential and ensuring that investors are well-placed to benefit from the full spectrum of opportunities in the evolving cybersecurity landscape.

III. Overview of the Rize Cybersecurity and Data Privacy UCITS ETF

The **Rize Cybersecurity and Data Privacy UCITS ETF** offers investors pure exposure to the evolving cybersecurity landscape, focusing on thematic purity, ESG integration and liquidity. With a **TER of 0.45%**, the ETF screens and weights companies based on their cybersecurity-derived revenue, ensuring high revenue purity. Its robust liquidity profile, combined with stringent stress testing, ensures the fund can efficiently handle large inflows and outflows, including up to $100 million in a single day without exceeding 25% of the 3-month average daily volume of any individual stock.

Because of the ETF's construction and focus on revenue purity, the ETF is built to specifically target global growth leaders, particularly in the mid- to medium-large cap space, where emerging winners like **Palo Alto Networks** (2013), **Fortinet** (2015), **CrowdStrike** (2019) and **SentinelOne** (2021) have historically arisen.

Key Features:

- **Revenue Purity:** Companies are screened and weighted based on their revenue from cybersecurity products and services, ensuring concentrated exposure to growth in the sector.
- **Liquidity Profile**: The ETF sets a high threshold for liquidity and incorporates rigorous stress testing to maintain portfolio stability during significant market movements.
- **ESG Integration:** Excludes companies engaged in controversial industries, such as weapons manufacturing, ensuring ESG alignment and thematic integrity.
- **Leadership Capture:** The ETF tilts towards mid- to medium-large cap companies driving innovation, employing a best-in-class strategy to adapt to shifts in industry leadership.

By investing in the Rize Cybersecurity and Data Privacy UCITS ETF, you gain access to a diversified, strategically positioned portfolio that seeks to capture the future growth potential of the cybersecurity sector.

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Rahul joined ARK in September 2023 following ARK's acquisition of Rize ETF (now ARK Invest Europe), of which he was co-founder and director. Rahul is a managing director and global head of index in Europe as well as director on the board of the ARK Invest UCITS ICAV. An expert strategist in thematic and sustainable investments, Rahul is responsible for spearheading global systematic (self-indexed) strategies, overseeing European UCITS product strategy and implementation, and leading investment research alongside managing our product specialist team. His research focus includes the energy transition, food sustainability, and the digital economy.

Prior to ARK Invest Europe, Rahul served as Co-Head of ETF Investment Strategies at Legal & General Investment Management (LGIM), a platform LGIM acquired from ETF Securities in 2018. Working in the ETF industry since 2010, Rahul has developed a profound expertise in systematic investment strategies and product development, covering the full spectrum from ideation to strategy formulation.

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