ISE Cyber Security® UCITS Index
METHODOLOGY

September 2018
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1. INTRODUCTION

The ISE Cyber Security UCITS Index is designed to track public companies that are actively involved in providing cyber security technology and services.

2. SECURITY ELIGIBILITY

2.1 ELIGIBILITY CRITERIA

To be eligible for inclusion in the Index, an Index Security\(^1\) must meet the following criteria:

a) Be issued by a company that has all or a material proportion of their revenues from cyber security-related products and/or services (refer to Industry Classification document) which are categorized into:

   (i) Infrastructure Provider - companies that directly provide hardware or software for cyber security and in respect of which cyber security activities are the key driver of their business;

   (ii) Service Provider - companies are those whose business models are defined by their roles in providing secure cyber-based services and for which those business activities are a key driver of their business;

b) have its listing on any eligible exchange specified in Appendix A;

c) have a minimum market capitalization of USD 100 million;

d) have a minimum trailing 3-month average daily value traded of USD 1 million.

2.2 SECURITY TYPES

Index eligibility is limited to specific security types only. The security type eligible for the Index include common stocks and depository receipts.

2.3 CALCULATION OF INITIAL WEIGHTS

Index securities that fulfill the above criteria shall be selected to be included and are assigned an initial weight in accordance with the methodology described below:

Weighting Process

Weighting Process - Overview

The Initial Weights for the Index Components are equally weighted within each Classification Group, where the Classification Group is market-cap weighted. The Initial Weights are then assessed against a Liquidity Constraint, which may result in a Final Weight which is less than the Initial Weight for some Index Components. As a corollary, some of the more liquid Index Components may end up with Final

\(^1\) An Index Security is defined as a security meeting all eligibility requirements for the Index.
Weights greater than their respective Initial Weights. Any excess weight arising from a reduction in Initial Weight is redistributed equally within a Classification Group amongst only those Index Components which had previously passed the Liquidity Constraint. This redistribution may result in other Index Components, which had previously passed the Liquidity Constraint, to fail on this iteration. In which case, the process is repeated until all Index Components have satisfied the Liquidity Constraint.

Any Index Component with a Final Weight equal to or less than 0.50% is removed from the Index. Also, any Index Component with a Final Weight greater than or equal to 5% resulting from upward scaling of its Initial Weight is capped at 4.75%. For the avoidance of doubt, this does not apply to downward scaling, e.g. should an Index Component begin the process with an Initial Weight of 5.75% and be scaled down to 5.20%, this would not result in a 4.75% cap for this Index Component.

Initial Weighting Process – Full Calculation

The first iteration in determining the weights to the Index Components are: **Step 1**: Calculate the market-cap weight of each Classification Group, and then **Step 2**: Equally weight each Index Component within its Classification Group.

**Step 1**: Determine the market-cap weights of each Classification Group.

\[ W_D^{INF} = \frac{\sum_{s_i \in INF} mc_D(s_i)}{\sum_{s_i \in INF} mc_D(s_i) + \sum_{s_j \in SVC} mc_D(s_j)} \]

Where

- \( W_D^{INF} \) The market-cap weight of the “Infrastructure Provider” Classification Group as of Determination Date \( D \)
- \( W_D^{SVC} \) The market-cap weight of the “Service Provider” Classification Group as of Determination Date \( D \)
- \( mc_D(s_i) \) The market cap of Index Component \( s_i \) converted into USD with reference to the Index FX Rate as of Determination Date \( D \)
- \( s_i \in INF \) All Index Components which are a member of the “Infrastructure Provider” Classification Group

**Step 2**: Determine the Initial Weights \( W_D^i \) for each Index Component \( s_i \) within each Classification Group \( G \):

\[ W_D^i = \frac{W_G}{|G|} \quad \forall \ s_i \in G \]

Eq. 2
2.4 COMPONENT WEIGHTING ADJUSTMENT

Once initial component weights are established those weights are then optimized to account for component securities exhibiting traits of limited liquidity.

**Step 1:** Determine the liquidity for each Index Component $s_i$:

Let $liq(s_i)$ denote the 3-month Average Daily Value (ADV) traded for $s_i$ as of Determination Date $D$, calculated in accordance with the following formula:

$$liq(s_i) = \frac{1}{n} \sum_{t=D-3m}^{D} P_t^i \cdot Q_t^i \cdot FX_t^i$$  \hspace{1cm} Eq. 3

Where:

- $n$: The number of Trading Days from and including $D - 3m$ to and including $D$
- $D - 3m$: 3 calendar months prior to $D$
- $P_t^i$: Price of stock $i$ as of Trading Day $t$
- $Q_t^i$: Number of Index Shares of stock $i$ as of Trading Day $t$
- $FX_t^i$: Index FX Rate

**Step 2:** Test the Liquidity Constraint for each $s_i$ and determine the new weight (the “Adjusted Weight”)

Let $Amt_D^i$ represent ratio of the amount traded for $s_i$ as over of the 3-month liquidity $\cdot liq(s_i)$ as of Determination Date $D$, based on the theoretical investment size $INV$, as follows:

$$Amt_D^i = \frac{W_D^i \cdot INV}{liq(s_i)}$$  \hspace{1cm} Eq. 4

Where:

- $INV$: USD 25 million: The implied threshold amount for one-time investment by an index-tracking product

Check the Liquidity Constraint to test whether the Initial Weight ($W_D^i$) of $s_i$ needs to be adjusted down, given by:

$$LiquidityConstraint: \quad Amt_D^i \leq \mathcal{H}$$  \hspace{1cm} Eq. 5

Where

- $\mathcal{H}$: 25%: The implied threshold percentage of 3-month ADV traded
**Step 3:** If the Liquidity Constraint is satisfied, then the Initial Weight \( W_D^i \) of \( s_i \) does not need to be adjusted, and the Adjusted Weight for \( s_i \), denoted by \( W'_i \) (for brevity we drop the subscript \( D \) denoting the reference to the Determination Date) is simply equal to the Initial Weight, i.e.

If Liquidity Constraint is satisfied, then:

\[ W'_i = W_D^i \quad \text{Eq. 6} \]

If the Liquidity Constraint is not satisfied, then force the condition to be true (as per \text{Eq. 7}) by setting \( Amt_D^i \) in \text{Eq. 4} equal to \( \mathcal{H} \) in \text{Eq. 5}, and rearranging the equation to determine the scaled down Adjusted Weight of \( s_i \), i.e.

\[ Eq. 4 = Eq. 5 \]

\[ \mathcal{H} = \frac{W'_i \cdot INV}{liq(D)^i} \quad \text{Eq. 7} \]

Therefore:

\[ W'_i = \frac{\mathcal{H} \cdot liq(s_i)}{INV} \quad \text{Eq. 8} \]

**Step 4:** Redistribute the excess weights

Unless each Index Component satisfied the Liquidity Condition on the first iteration, the sum of the Adjusted Weights will be less than 100%. To ensure the weights of the Index Components sum to 100%, we compute the following:

(a) Within Classification Group \( G \), calculate the sum of the excess weights (excess weights means \( W_i - W'_i \))

\[ EW_G = \sum_i W_i - W'_i \quad , \forall \ s_i \in G \quad \text{Eq. 9} \]

(b) Redistribute (still within \( G \)) amongst those Index Components \( s_i \) which had previously satisfied the Liquidity Condition. These new weights are now the Final Weights, denoted \( W_i^F \). For those Index Components which did not previously satisfy the Liquidity Constraint, the Final Weight is simply equal to the Adjusted Weight.

In the event that there are no more Index Components available to allocate excess weight in a given Classification Group, any excess weight will be allocated to components in the other Classification Group.
∀ \( s_i \in G \) which satisfied the Liquidity Constraint:
\[
W_i^F = W_i' + \frac{EW_G}{|G|_{\text{pass}}}
\]
Eq. 10

∀ \( s_i \in G \) which failed the Liquidity Constraint:
\[
W_i^F = W_i'
\]

Where:
\( |G|_{\text{pass}} \) The number of Index Components in \( G \) that passed their Liquidity test

**Step 5: Index Component Caps and removals**

(a) Any Index Component with Final Weight less than or equal to 0.50% is removed from the Index.

(b) If the Final Weight of an Index Component is greater than or equal to 5% as a result of upward scaling from its Initial Weight, then the Final Weight of this Index Component is set to 4.75%.
For the avoidance of doubt, if the Initial Weight was already greater than or equal to 5% then this Index Component’s Final Weight would not be subject to further adjustment.

(c) Repeat Steps 2 – Steps 4 substituting the Initial Weights in Eq. 4 with the Final Weights resulting from Eq. 10 until the Liquidity Constraint is satisfied for each Index Component and sum of Final Weights = 100%

The Index composition does not have a fixed number of stocks and attempts to include every stock in the ISE Cyber Security® Industry Classification that meets the selection criteria contained herein.

The Index shall contain a minimum of 24 stocks.

No single component stock may represent more than 10% of the weight of the Index, and the cumulative weight of all components with an individual weight of 5% or greater must not in the aggregate account for more than 40% of the weight of the Index.

### 3. INDEX CALCULATION

The Index is an equal weighted index. The Index began on December 31, 2010, with a base value of 100.00.

Three versions of the Index are calculated in USD:

- The price return index (Nasdaq: HUR) is ordinarily calculated without regard to cash dividends on Index Securities.
- The total return Index (Nasdaq: HURTR) reinvests cash dividends on the ex-date. The total return index began on February 6, 2017 at a base value of 200.00
- The net total return index (Nasdaq: HURNTR) reinvests cash dividends on the ex-date and adjusts for an Index Security’s country of incorporation withholding rate. All Indexes reflect extraordinary cash distributions.

3.1 LAST SALE PRICE

Last Sale Price refers to the last regular way trade reported on such security’s Index Market. The Index Market is the listing market for which prices are received and used by Nasdaq in the Index calculation and generally will represent the most liquid trading market of the Index Security.

If a security does not trade on its Index Market on a given day or the Index Market has not opened for trading, the most recent last sale price from the Index Market (adjusted for corporate actions, if any) is used. For securities where Nasdaq is the Index Market, the Last Sale Price may be the NASDAQ Official Closing Price (NOCP) when Nasdaq is closed.

3.2 FOREIGN EXCHANGE RATE

The Index uses the WM Company, Closing Spot Rates at 16:00:00 UK time in the calculation of the closing Index Values. SIX Financial Information Intraday Spot Rates are applied to the real time Index calculations during the trading day.

3.3 INDEX SHARES

Index Shares are calculated for each index security using the adjusted weights calculated in sections 2.3 & 2.4.

3.4 INDEX SECURITY AND MARKET VALUE

The Index Security Market Value is the Last Sale Price of the Index Security multiplied by its Index Shares, converted into the index currency. The Index Market Value is the aggregate of each of the Index Security’s Market Value.

3.5 PRICE RETURN DIVISOR

The Divisor serves the purpose of scaling an Index Market Value to a lower order of magnitude which is recommended for reporting purposes. The Divisor is adjusted to ensure that changes in Index Securities either by corporate actions or index participation occurring outside of trading hours do not affect the value of the Index. All Divisor changes occur after the close of Index Security markets contained in the Index.

The Price Return Index Divisor for day \( t \) is calculated as the ratio of the Start Of Day (SOD) market value and the previous day index value as follows:

\[
Price \ Return \ Index \ Divisor_t = \frac{Index \ SOD \ Market \ Value_t}{Index \ Value_{t-1}}
\]
3.6 **PRICE RETURN INDEX VALUE CALCULATION**

The Price Return Index value reflects changes in market value of Index Securities during the trading day and is calculated without regard to ordinary cash dividends, but includes special dividends and the formula is as follows:

\[
Price\ Return\ Index_t = \frac{Index\ Market\ Value_t}{Index\ Divisor_t}
\]

3.7 **GROSS TOTAL RETURN INDEX**

The Gross Total Return Index value reflects ordinary cash and special dividends and the formula is as follows:

\[
Gross\ Total\ Return\ Index_t = Gross\ Total\ Return\ Index_{t-1} \times \frac{Price\ Return\ Index_t + IDP}{Price\ Return\ Index_{t-1}}
\]

where:

- \( Gross\ Total\ Return\ Index_t \) = the value of the Gross Total Return Index on current day
- \( Gross\ Total\ Return\ Index_{t-1} \) = the previous day’s closing Gross Total Return Index value
- \( Price\ Return\ Index_t \) = the value of the Price Return Index on current day
- \( Price\ Return\ Index_{t-1} \) = the previous day’s closing Price Return Index value

\[
IDP(\text{Index Dividend Points}) = \frac{Index\ Dividend\ Market\ Value_t}{Price\ Return\ Index\ Divisor_t}
\]

\( Index\ Dividend\ Market\ Value_t \) = sum of the Index Security Dividend Market Values (SOD or EOD) for all Index Securities on current day

\( Index\ Security\ Dividend\ Market\ Value_t \) = dividend per share for Index Security with ex-dividend date on the current day multiplied by the Index Shares of that Index Security multiplied by \( Fx\ rate_t \)

\( Fx\ rate_{t-1} \) = the previous day's WM Company Closing Spot Rate at 16:00:00 UK

3.8 **NET TOTAL RETURN INDEX**

The Net Total Return Index value reflects ordinary cash and special dividends adjusted for withholding tax rates (WTR as defined for each country is found in Appendix D and the formula is as follows):

\[
Net\ Total\ Return\ Index_t = Net\ Total\ Return\ Index_{t-1} \times \frac{Net\ Price\ Return\ Index_t + NetIDP_t}{Net\ Price\ Return\ Index_{t-1}}
\]
where:

\[ Net\ Total\ Return\ Index_t = \text{the\ value\ of\ the\ Net\ Total\ Return\ Index\ on\ current\ day} \]

\[ Net\ Total\ Return\ Index_{t-1} = \text{the\ previous\ day's\ closing\ Net\ Total\ Return\ Index\ value} \]

\[ Net\ Price\ Return\ Index_t = \text{the\ value\ of\ the\ Net\ Price\ Return\ Index\ on\ current\ day} \]

\[ Net\ Price\ Return\ Index_{t-1} = \text{the\ previous\ day's\ closing\ Net\ Price\ Return\ Index\ value} \]

\[ Net\ Price\ Return\ Index_t = \frac{Net\ Price\ Return\ Index\ Market\ Value_t}{Net\ Price\ Return\ Index\ Divisor_t} \]

**Net Price Return Index value is not publicly distributed. It is calculated only as the basis for the Net Total Return Index.**

\[ Net\ IDP(Net\ Index\ Dividend\ Points) = \frac{Index\ Net\ Dividend\ Market\ Value_t}{Net\ Price\ Return\ Index\ Divisor_t} \]

where:

\[ Net\ Index\ Dividend\ Market\ Value_t = \text{sum\ of\ the\ Security\ Dividend\ Market\ Values\ (SOD\ or\ EOD)\ adjusted\ for\ withholding\ tax\ rate\ (WTR)\ for\ all\ Index\ Securities\ on\ current\ day} \]

\[ Net\ Index\ Security\ Dividend\ Market\ Value_t = \text{dividend\ per\ share\ adjusted\ for\ withholding\ tax\ rate\ (WTR)\ for\ Index\ Security\ with\ ex-dividend\ date\ on\ the\ current\ day\ multiplied\ by\ the\ Index\ Shares\ of\ that\ Index\ Security\ multiplied\ by\ Fx\ rate_{t-1}} \]

\[ Fx\ rate_{t-1} = \text{the\ previous\ day's\ WM\ Company,Closing\ Spot\ Rate\ at\ 16:00:00\ UK}. \]

### 4. INDEX DISSEMINATION

All Indexes are calculated during the trading day and are disseminated once per second. The Indexes are calculated five (5) days a week, Monday through Friday, starting by the earliest time zone Asia/Tokyo and close by the latest time zone America/New York.

### 5. INDEX EVALUATION

The Index is evaluated quarterly in January, April, July and October. The above eligibility criteria are applied using available market data as of the end of November, February, May and August. Security additions and deletions are made effective after the close of trading the third Friday in April and October.

Additionally, if at any time during the year other than the Evaluation, an Index Security is determined to have become ineligible for continued inclusion in the Index due to bankruptcy, delisting, or a definitive agreement that would likely result in the security no longer being Index eligible, the security is removed from the Index and is not replaced. In the case of mergers and acquisitions, the Index Security may be removed the day following the shareholder vote or the expected expiration of the tender offer, provided the acquisition is not contested. In the
event the acquisition is contested then the deletion will occur as soon as reasonably practicable, once results have been received that indicate the acquisition will likely be successful. Ordinarily, a security will be removed from the Index at its Last Sale Price. If, however, at the time of its removal the Index Security is halted from trading on its primary listing market and an official closing price cannot readily be determined, the Index Security may, in NASDAQ’s discretion, be removed at a zero price. The zero price will be applied to the Index Security after the close of the market but prior to the time the official closing value of the Index is disseminated, which is ordinarily 17:16:00 ET.

6. INDEX MAINTENANCE

6.1 INDEX REBALANCING

On a quarterly basis in January, April, July and October, the Index will be rebalanced in conjunction with the Index Evaluation according to section 5. The Index employs an equal weighted methodology such that each Index Security’s Index market value is rebalanced quarterly, to an equal value corresponding to an equal percent weight of the Index’s aggregate market value. Numbers of Index Shares are calculated by dividing this equal-USD value for each Index Security by the corresponding Last Sale Price of the Index Security at the close of trading on the third Friday in January, April, July and October.

6.2 INDEX SECURITY CHANGES

If at any time during the year other than the quarterly Index Evaluation, an Index Security no longer meets the Eligibility Criteria, or is otherwise determined to have become ineligible for inclusion in the Index(es), the Index Security is removed from its Index.

In the case of mergers and acquisitions, the Index Issuer may be removed the day following the shareholder vote or the expected expiration of the tender offer, provided the acquisition is not contested. In the event the acquisition is contested then the deletion will occur as soon as reasonably practicable, once results have been received that indicate the acquisition will likely be successful.

6.2.1 BANKRUPTCY

If a company files for bankruptcy, the Index Security (ies) of the Issuer will be removed from the Index as soon as practicable thereafter. The value of the Index Security (ies) will be considered $0.00000001, if no other applicable price can be observed on Nasdaq Global Select Market or the Nasdaq Global Market.

6.3 INDEX SHARE CHANGES

Index Share changes are not made between quarterly rebalances; however, changes arising from stock dividends and stock splits are made to the Index on the evening prior to the effective date of such corporate actions. In the case of certain spin-offs or rights issuances, the price of the Index Security is adjusted.
7. CORPORATE ACTIONS

The following corporate actions will be made effective in the Index on the ex-date. If there is no ex-date announced by the Index Exchange, there will be no adjustment to the Index as a result of a Corporate Action.

7.1 STOCK SPLIT AND STOCK DIVIDEND

A stock split and stock dividend is the action of an Index Security in increasing its Index Shares and decreasing the par value in proportion. There is no flow of capital into or out of the company. The number of Index Shares increases but the market capitalization of the company remains unchanged.

The price of the Index Security is adjusted to reflect the ratio of a stock split and stock dividend a corresponding inverse adjustment to the Index Shares is made.

7.2 REVERSE STOCK SPLIT

A reverse stock split is the action of an Index Security in decreasing its Index Shares and decreasing the par value in proportion. There is no flow of capital into or out of the company. The number of Index Shares decreases but the market capitalization of the company remains unchanged.

The price of the Index Security is adjusted to reflect the ratio of the reverse stock split a corresponding inverse adjustment to the Index Shares is made.

7.3 SPECIAL CASH DIVIDENDS

A dividend is considered special if the information provided by the listing exchange in their announcement of the ex-date indicates that the dividend is special. Other nomenclature for a special dividend may be (but not limited to) extra, extraordinary, non-recurring, one-time, unusual, etc. The price of the Index Security is adjusted for the amount of the special cash dividend. A corresponding adjustment will be made to the Index Shares of the security such that the weight of the Index Security will not change as a result of the action.

7.4 CASH AND STOCK DIVIDENDS

If an Index Security is paying a cash and stock dividend on the same date, the cash dividend is applied before the stock dividend unless otherwise indicated in the information provided by the Index Exchange. Additionally, in the case of an optional dividend which allows the holder to choose between receiving cash or stock, the adjustment will be made in the manner the dividend has been announced by the Index Exchange.

7.5 STOCK DISTRIBUTION OF ANOTHER SECURITY

If an Index Security is distributing shares of a different security, the value of the Index Security will be adjusted downward to reflect the ratio of the distribution. There will also be an adjustment to Index Shares. If the security being distributed is another class of common shares of the same Issuer, the value of the existing Index Security will be adjusted downward to reflect the ratio of the distribution. There will be an adjustment to Index Shares.
Shares. The new class of shares is not added to the index. The divisor is adjusted to ensure that there is no discontinuity in the value of the Index which might otherwise be caused by any such change.

7.6 SPIN-OFFS

If an Index Security is spinning off a security, the price of the security will be adjusted. There will also be an adjustment to Index Shares. If a when-issued market is established for the SpinCo, the price of the Index Security is adjusted downward by the value of the spinoff and a corresponding adjustment will be made to the Index Shares of the security such that the weight of the Index Security will not change as a result of the action. The value of the spin-off is determined by multiplying the spin-off ratio by the when-issued price. Additionally, for a spin-off event, if there is a no when-issued trading available for the spin-co security, the spin-co security may be added to the index at a zero value. In this case, the spin-co security will be removed from the Index after two full days of trading.

7.7 RIGHTS OFFERINGS

The price of an Index Security is adjusted on the ex-date for rights offerings if the rights are transferable and has a subscription price on an equivalent per share basis that is less than the closing price of the Index Security the right entitles a holder to purchase (the “Underlying Security”) on the day prior to the ex-date (in-the-money). The price of the Index Security is adjusted downward for the value of the right and a corresponding adjustment will be made to the Index Shares of the security such that the weight of the Index Security will not change as a result of the action. The value of the right is determined by the previous Last Sale Price (LSP) of the Underlying Security minus the sum of the Subscription Price of the right plus the cash dividend of the Underlying Security, if any, divided by the number of rights required to purchase one share, plus one.

8. GENERAL ANNOUNCEMENT POLICY

Nasdaq announces Index-related information via our premier service Global Index Watch at http://indexes.nasdaqomx.com.

Generally, the list of additions and deletions as a result of each Quarterly Evaluation is publicly announced via an announcement on the Global Index Watch (GIW).

Corporate actions are implemented in the Indexes in accordance with the Index maintenance rules. Announcement is made prior to the effective date of the corporate actions.

In the event that a change has been made to an Index intraday, an announcement will be made to inform clients of the change.
In the event that an Index calculation has been corrected historically an announcement will be provided and clients are asked to update their databases accordingly.

9. **DISCRETIONARY ADJUSTMENTS**

Nasdaq may, from time to time, exercise reasonable discretion as it deems appropriate in order to ensure Index integrity.
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## APPENDIX A

### Eligible Exchanges

The following tables show a regional breakout of the current list of Eligible Exchanges. Only securities listed on an Eligible Exchange may be considered for inclusion in the Index.

<table>
<thead>
<tr>
<th>Americas</th>
<th>Europe - Africa - Middle East</th>
</tr>
</thead>
<tbody>
<tr>
<td>BM&amp;FBOVESPA</td>
<td>Brazil</td>
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<tr>
<td>Bolsa de Valores de Colombia</td>
<td>Colombia</td>
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<tr>
<td>Lima SE</td>
<td>Peru</td>
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