



**NYSE® Arca North American
Telecommunications Index™
(XTC)**

Version 2.0
Valid from
April 24, 2018

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Version History:

Version 2.0 (Effective April 24, 2018)

This version incorporates language reflecting changes to the announcement policy, legal structure of the Index Administrator, introduces language codifying certain procedures relating to Index governance, consultation and index rule reviews and includes an updated Disclaimer.

Version 1.0 (Effective January 18, 1993)

The methodology document covers the newly-launched NYSE® Arca North American Telecommunications Index™.

1. Index summary

Factsheet	
Full Names	NYSE® Arca North American Telecommunications Index™
Index Types	Price Return (USD): XTC Price Return Settlement (USD): XTV
Index Description	The NYSE® Arca North American Telecommunications Index™ is a rules-based index designed to measure the performance of widely held, highly capitalized companies in the North American telecommunications industry. Index composition and corporate actions, including rebalance information, can be accessed from NYSE Market Data at www.nyse.com/market-data/indices .
Eligible Stocks	All component stocks will either be listed on the NYSE American, the New York Stock Exchange (“NYSE”), or traded through the facilities of the National Association of Securities Dealers Automated Quotation System (“NASDAQ”) and reported National Market System (“NMS”) securities.
Number of Constituents	Variable
Weighting	Equal-weighted
Review of Composition	The Index is rebalanced quarterly based on closing prices on the third Friday in January, April, July and October.
Effective Date of the Rebalance	Rebalances are effective the opening of the first trading day after the third Friday of January, April, July and October.
Calculation Frequency	Price Return: Every 15 seconds between 09:30 & 18:00 ET Settlement: At the market close every third Friday of each month following the monthly options expiration calendar.
Base Date	January 18, 1993
Base Level	300
Historic Data Available Since	January 18, 1993
Bloomberg Code	XTC <INDEX>, XTV <INDEX>
Reuters Code	.XTC, .XTV
Launch Date	January 18, 1993
Website	https://www.theice.com/market-data/indices

2. Governance

Index Sponsor & Administrator

ICE Data Indices, LLC (“IDI”) is the Index Sponsor and the Index Administrator.

IDI is responsible for the day-to-day management of the Index, including retaining primary responsibility for all aspects of the index determination process, including implementing appropriate governance and oversight, as required under the International Organization of Securities Commission’s Principles for Financial Benchmarks (the IOSCO Principles). The Governance Committee is responsible for helping to ensure IDI’s overall compliance with the IOSCO Principles, by performing the Oversight Function which includes overseeing the index development, design, issuance and operation of the indices, as well as reviewing the control framework. IDI is also responsible for decisions regarding the interpretation of these rules and the Governance Committee is responsible for reviewing all rule book modifications and index constituent changes with respect to the Index to ensure that they are made objectively, without bias, and in accordance with applicable law and regulation and IDI’s policies and procedures. Consequently, all IDI’s and the Governance Committee discussions and decisions are confidential until released to the public.

Cases not covered in rules

In cases which are not expressly covered in these rules, operational adjustments will take place along the lines of the aim of the Index. Operational adjustments may also take place if, in the opinion of the Index Administrator, it is desirable to do so to maintain a fair and orderly market in derivatives on this Index and/or this is in the best interests of the investors in products based on the Index and/or the proper functioning of the markets.

Any such modifications described under this section or exercise of Expert Judgment will also be governed by any applicable policies, procedures and Guidelines in place by IDI at such time.

Rule book changes

The Governance Committee reviews all rule book modifications and Index changes to ensure that they are made objectively, without bias and in accordance with applicable law and regulation and IDI’s policies and procedures. These rules may be supplemented, amended in whole or in part, revised or withdrawn at any time in accordance with applicable law and regulation and IDI applicable policies and procedures. Supplements, amendments, revisions and withdrawals may also lead to changes in the way the Index is compiled or calculated or affect the Index in another way.

Limitations of the Index

All the NYSE indices produced by IDI (“the NYSE Indices”) may be subject to potential limitations, such as a decline in the pool of available eligible securities due to advancements in technology,

shifts in demographic spending or the economy, changes in regulation or accounting rules, consolidation in certain sectors or industries, or other factors. Other limitations may include the ability of the Benchmark to operate in illiquid or fragmented markets.

IDI seeks to manage and mitigate these limitations through the Benchmark design, review and oversight process.

3. Index Description

The NYSE® Arca North American Telecommunications Index™ (XTC) is an equal-dollar weighted index designed to measure highly-capitalized companies in the North American telecommunications industry. The telecommunications industry in North America includes U.S., Canadian, and Mexican companies that provide telephone, long distance, cellular phone, or other telecommunications related services; supply telecommunications equipment; or which otherwise are involved in the telecommunications industry.

4. Publication

4.1 The opening, intraday and closing or daily publication of index values.

Opening

The first index level is calculated and published around 09:30 ET, when the U.S. equity markets open for their regular trading session. The calculation of that level utilizes the most updated prices available at that moment. In the case of constituents that have a non-traded, halted or suspended status, or have not opened for the current day, the previous day's reference prices (primary exchange official closes) or estimated prices (for IPOs, buyouts and swap offers) are used.

Dissemination frequency

The level of the price return index is in principle published every 15 seconds to the ICE Data Global Index Feed (ICE Data GIF). The calculated index levels incorporate the latest traded price of each constituent from within the regular trading session, normally 09:30 to 16:00 ET. The index only holds equities listed and traded in the U.S., and thus, intraday calculations of the index would incorporate trades on a consolidated level, from all exchanges including those not designated as the official primary exchange.

The index is calculated from 09:30 until 18:00 ET on those days specified as index business days. Index business days will be classified as days on which the U.S. Equity Markets (NYSE, NASDAQ and NYSE American) are open for a full or partial day of trading.

Index settlement values are calculated at the market close every third Friday of each month following the monthly options expiration calendar.

Closing level

The closing level is the last level disseminated on the trading day and uses the official close prices from the primary listing market for each constituent. For constituents that have non-traded, halted or suspended status, or have not opened for the current day, the previous day's reference prices (primary exchange official closes) or estimated prices (for IPOs, buyouts and swap offers) are used instead. In the case of exceptional market conditions, the Index Administrator reserves the right to utilize other prices in the calculation of the official closing level, as indicated below in Section 4.2.

Sources of Data

The Consolidated Tape (CTS/UDTF) is the primary market data source for U.S. equity real-time and closing prices. Additional sources of data less commonly used include market data vendors, company announcements, exchange announcements and other official sources.

4.2 Exceptional market conditions and corrections

The Index Administrator retains the right to delay the publication of the opening level of the index. Furthermore, the Index Administrator retains the right to suspend the publication of the level of the index if it believes that circumstances prevent the proper calculation of the index.

If index constituent prices are cancelled, the index will not be recalculated unless the Index Administrator decides otherwise.

Reasonable efforts are made to ensure the correctness and validity of data used in real-time index calculations. If incorrect price or corporate action data affects index daily closing values, they are corrected retroactively as soon as possible and all revisions are communicated out to the public and market data vendors.

There is the possibility of an exchange or market-wide event resulting in the normal closing auction not going off or official closing prices not being available. In those situations, the index will take guidance from the respective exchange(s) and address on an event-by-event basis. Exchange or market-wide events include, but are not limited to, the following:

- Volatility Halts
 - LULD (Limit Up / Limit Down)
 - Market Wide Circuit Breaker
- Technological Problems / Failures
- Natural Disaster or Other BCP-Related Event

4.3 Changes to the Index

Announcement policy

Changes to the index methodology will be announced by an index announcement which will be distributed by IDI via www.nyse.com/indices and NYSE Market Data at www.nyse.com/market-data/indices

As a general rule, the announcement periods that are mentioned below will be applied. However, Emergency actions, including urgently required corporate action treatments, often resulting from late notices from the relevant company or exchange, may require the Index Administrator to deviate from the standard timing.

Inclusion of new constituents

The inclusion of new companies in the index will typically only occur during the quarterly recompositions or rebalances, although there could be exceptions based on a specific corporate action affecting a current constituent. The inclusion of the new company will be announced at least two trading days before the effective date of the actual inclusion. For example, for a

rebalance effective for the market open April 23, 2018, the announcement would occur after the close on April 18, 2018.

Removal of Constituents

Components would be removed from the index as a result of periodic corporate actions as well as the results of the quarterly rebalances. All removals will be announced at least one trading day before the effective date of the removal. It should be noted that in the case of mergers and acquisitions, every effort will be made to remove the company at some reasonable time ahead of the suspension in trading in the acquired company. There will be certain situations and corporate actions that would require the removal of a company that has already ceased trading. In those cases, the company will be removed from the index at its last traded price, or, at the discretion of the Index Administrator, at a derived price that most accurately represents its post-suspension value.

Corporate actions

In case of an event that could affect one or more constituents, the Index Administrator will inform the market about the intended treatment of the event in the index shortly after the firm details have become available and have been confirmed. When possible, the corporate action will be announced, even if not all information is known, at least one trading day before the effective date of the action. Once the corporate action has been effectuated, the Index Administrator will confirm the changes in a separate announcement.

Rule changes

Going forward, barring exceptional circumstances, the Index Administrator shall announce proposed Rules changes to stakeholders prior to them being implemented. Stakeholders shall also be notified of when the changes shall take effect.

Index Reviews

IDI shall undertake regular reviews of the Index, the methodology and the market which it represents to ensure it continues to meet the index objective, in accordance with IDI's policies and procedures. Should changes to the Index be required or proposed, this will be communicated to stakeholders in accordance with IDI's policies and procedures.

Consultations

IDI may from time to time consult with stakeholders on proposed material changes that affect the Index in accordance with IDI's policies and procedures including IDI's consultation policy: https://www.theice.com/publicdocs/Consultation_Policy.pdf. Such proposals shall be published to Stakeholders and all feedback received will be considered by the Index Administrator. Any resulting changes to the Index will be announced prior to it being implemented.

Reconstitution/Rebalance: Publication of Results

The new composition of the index, including the companies to be a part of the index and their corresponding new index shares, will be announced at least two trading days before the effective date and can be accessed from NYSE Market Data at www.nyse.com/market-data/indices.

5. Calculation

5.1 Calculation of the price index

The index is calculated on a Price Return basis. The current index level would be calculated by dividing the current modified index market capitalization by the index divisor. The divisor was determined off of the initial capitalization base of the index and the base level. The divisor is updated as a result of corporate actions and composition changes.

Index settlement values are calculated at the market close every third Friday of each month following the monthly options expiration calendar.

A full description of the formulae used to calculate Price Return index values can be found in the "NYSE Indices -Guide to Index Mathematics" at <https://www.nyse.com/indices/rules>.

6. Index rebalances

6.1 General aim of rebalances and frequency

General aim of the periodical rebalance

The general aim of the quarterly rebalance of the index is to ensure that the selection and weightings of the constituents continues to reflect as closely as possible the index's objective of identifying and selecting stocks from a particular market segment. The Index Administrator reserves the right to, at any time, change the number of stocks comprising the index by adding or deleting one or more stocks, or replacing one or more stocks contained in the index with one or more substitute stocks of its choice, if in the Index Administrator's discretion such addition, deletion or substitution is necessary or appropriate to maintain the quality and/or character of the index. Such index constituent changes are reviewed by the Governance Committee to ensure that they are made objectively, without bias and in accordance with applicable law and regulation and IDI's policies and procedures.

Frequency

Changes to the index constituents may occur during a scheduled rebalance and as a result of the removal of an index constituent.

The NYSE® Arca North American Telecommunications Index™ rebalances become effective at the open of the first trading after the third Friday of January, April, July and October. The rebalance announcement will be made after the close two trading days prior to that last trading day. The reference date for all company-specific data and information utilized in the rebalancing process will be taken from prices established at the close of trading on the third Friday of January, April, July and October.

6.2 Index universe and selection principle

Index Universe

Development and maintenance of the component universe for the "NYSE® Arca North American Telecommunications Index™ is undertaken by IDI. The Universe is composed of all listed equity securities that are determined by IDI to be representative of the Telecommunications Industry. This determination is completed using publically available information on individual security issuers as well as the industry. Also instrumental in this determination is IDI employees' expertise concerning index design and development and their knowledge surrounding index use and stakeholder feedback. IDI may change the composition of the Universe at any time to reflect the conditions of the Telecommunications Industry and to ensure that the pool of component securities

continues to represent the Telecommunications Industry, in accordance with the Index requirements.

Selection of constituents

At each quarterly rebalance, the index universe will be screened utilizing the following criteria:

1. All component stocks will either be listed on the NYSE American, NYSE, or NASDAQ and reported NMS securities
2. A minimum market value of at least \$75 million, except that no more than 10% of the weight of the index, the market value can be at least \$50 million
3. Trading volume in each of the last six months of not less than 500,000 shares, except that no more than 15% of the weight of the index, the trading volume may be at least 300,000 shares in each of the last six months
4. At least 90% of the index's numerical index value, and at least 80% of the total number of component securities, will have an observed share price of greater than \$3.00 for each of the five days prior to the rebalance reference date
5. Underlying Foreign securities of American Depositary Receipts ("ADRs") thereon that are not subject to comprehensive surveillance agreements do not in the aggregate represent more than 20% of the weight of the index
6. The total number of component securities will not increase or decrease by more than 33-1/3% from the number of components in the Index at the time of its initial listing, and in no event will the Index have less than nine components

6.3 Periodical update of weighting

Determining constituent weightings at Quarterly Index Rebalances

Every quarter after the close of trading on the third Friday of January, April, July and October, the Index portfolio is adjusted by changing the number of shares of each component stock so that each one again represents an approximately equal dollar amount in the Index.

The newly adjusted portfolio becomes the basis for the Index's value effective on the first trading day following the quarterly adjustments. If necessary, a divisor adjustment is made to ensure continuity of the Index's value.

7. Corporate Actions

7.1 General

The index may be adjusted in order to maintain the continuity of the index level and the composition. The underlying aim is that the index continues to reflect as closely as possible the index's objective of identifying and selecting stocks from a particular market segment.

Adjustments take place in reaction to events that occur with constituents in order to mitigate or eliminate the effect of that event on the index performance.

A full description of standard corporate action events and their handling can be found in the "NYSE Indices Corporate Action Handling Guide" at <https://www.nyse.com/indices/rules>.

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