

ETF TRADING ON XETRA

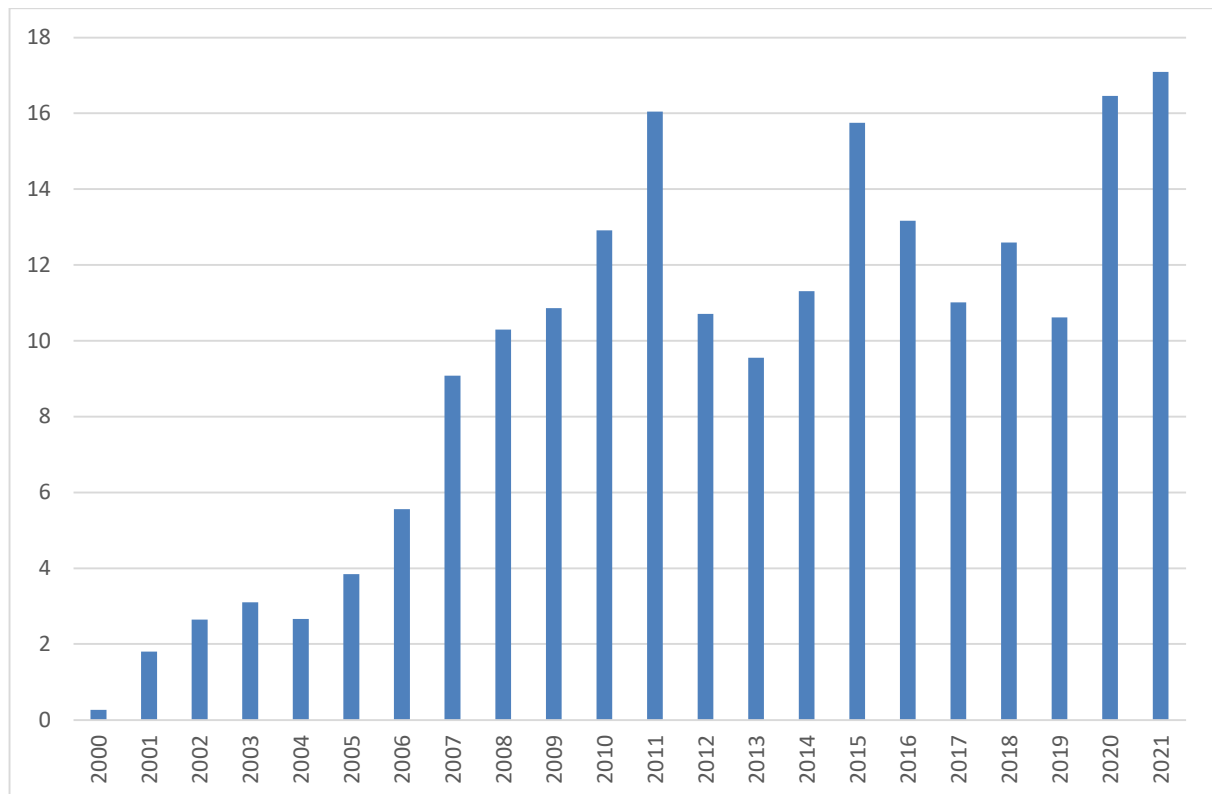
Facts & figures for the year 2021

Overview

- Deutsche Börse's XTF segment for exchange-traded index funds (ETFs) was launched on 11 April 2000.
- Xetra® was the first trading platform for ETFs in Europe and since then is the market leader in terms of listed ETFs (1,757 at the end of December 2021) and trading turnover.
- The market share of Xetra for the on-exchange volume of ETFs for 2021 in Europe was 32 per cent.
- 78 percent of the exchange-traded funds turnover in Germany is generated on Xetra.
- ETFs can be traded on Xetra every trading day from 9:00 to 17:30 and on the Börse Frankfurt trading venue from 8:00 to 22:00. All ETFs traded in euro on Xetra are also tradable through Börse Frankfurt.

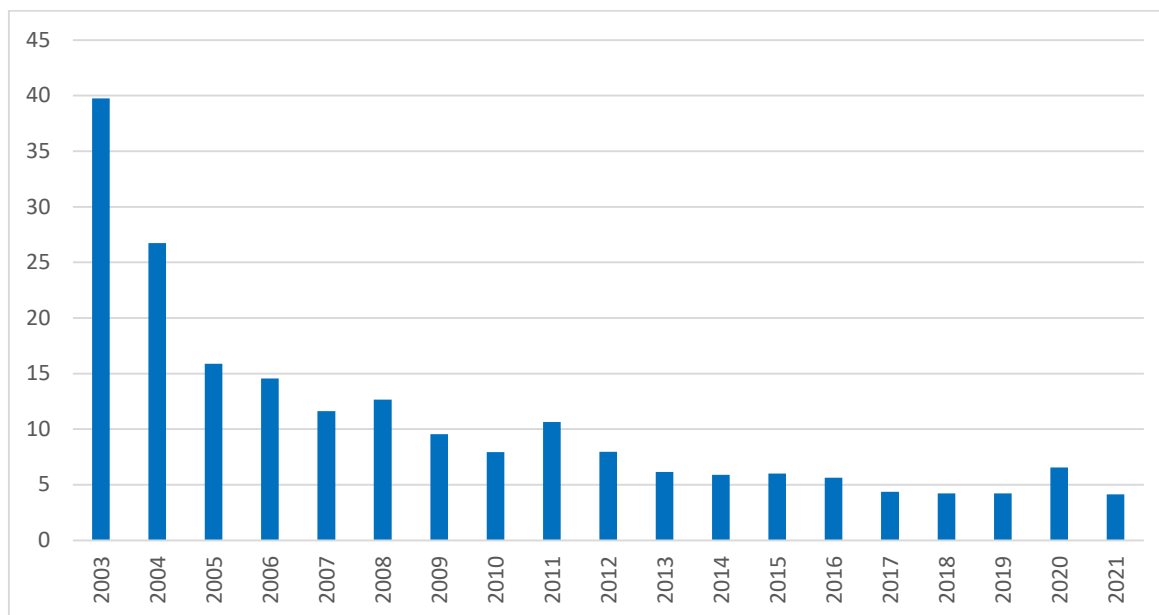
Development of trading turnover and liquidity

Xetra turnover in € billions (monthly average)



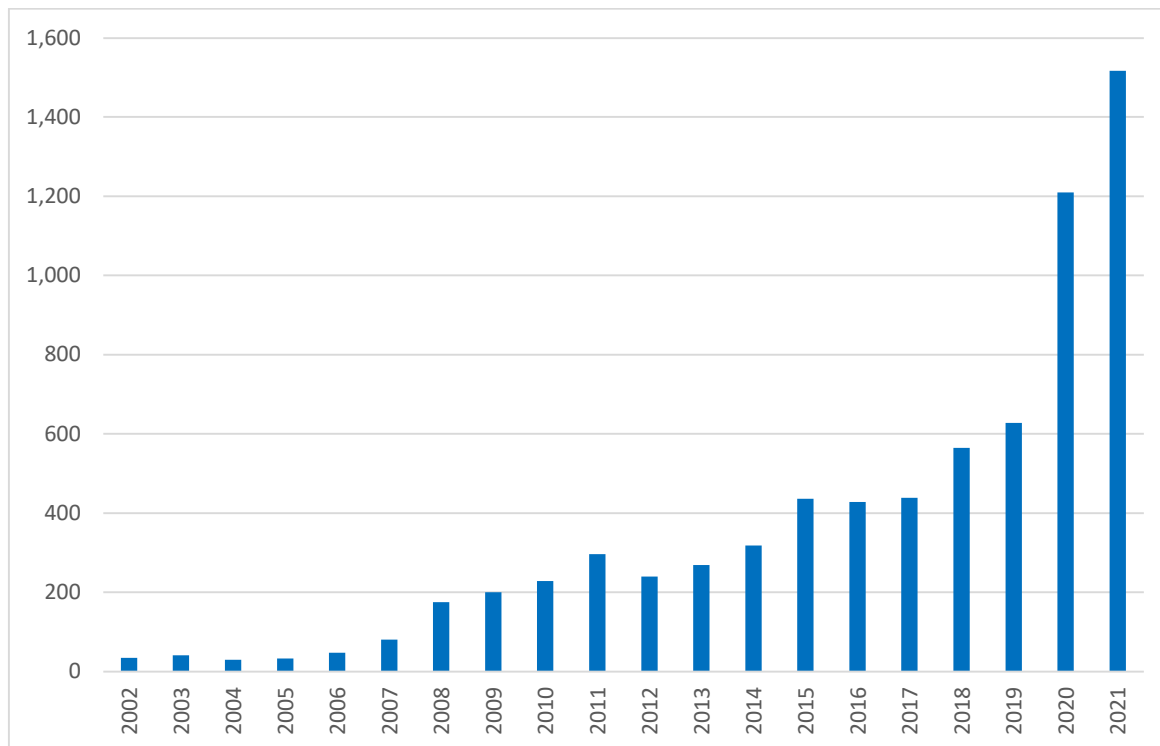
- The average monthly order book volume in 2021 was €17.1 billion.
- In general, the trading turnover correlates strongly with the volatility on the stock market. The higher the volatility, the higher the trading turnover.
- On average, the Xetra Liquidity Measure (average spread for a roundtrip order of €100k) for the 20 most liquid equity index ETFs on Xetra was around 4.1 basis points in 2021.

XLM (€100k) of the 20 most liquid equity ETFs on Xetra (in basis points)



- Each ETF is supported by at least one Designated Sponsor as liquidity provider. Designated Sponsors are obliged to post firm bid and offer prices. Currently, more than 70 per cent of ETFs are supported by more than one Designated Sponsor. 15 Designated Sponsors provide liquidity in ETF trading on Xetra.
- Measured by ETF trading volume in 2021, the share of private investors¹ was 10 per cent; measured by the number of transactions, it was 39 per cent.
- The average order size for ETFs on Xetra was €23,000 in 2021, it amounted to €27,000 in 2020.

¹ Assuming that all customer orders in an amount of up to €25,000 were placed by private investors.

Number of executed orders (monthly average) on Xetra (in thousand)

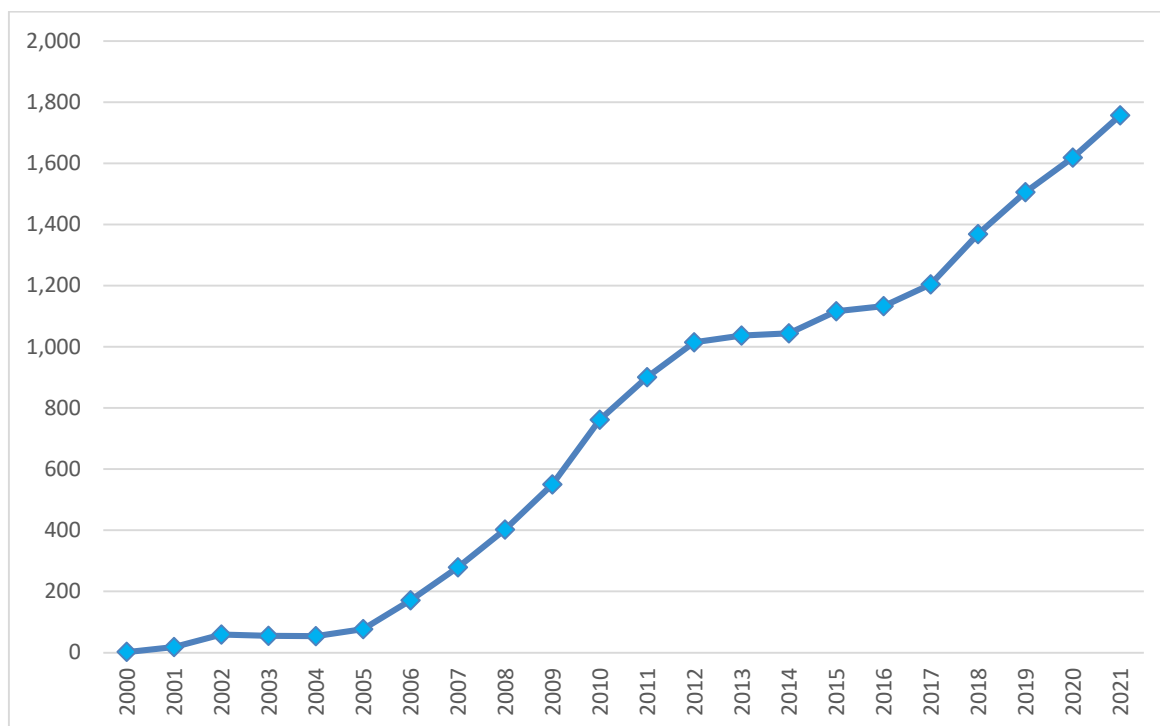
- The average number per month of orders executed in 2021 was a record 1,516,617 (2020: 1,209,756 orders per month).

Top 10 reference indices of 2021

Benchmark	Turnover in €bn	Highest Volume ETF	Turnover in €bn
MSCI World Index	16.23	iShares Core MSCI World UCITS ETF	6.92
DAX Index	13.97	iShares Core DAX UCITS ETF (DE) EUR (Acc)	8.87
EURO STOXX 50 Index	9.30	iShares Core EURO STOXX 50 UCITS ETF (DE)	3.05
S&P 500 Index	8.93	iShares Core S&P 500 UCITS ETF USD (Acc)	3.90
Nasdaq 100 Index	5.57	iShares Nasdaq-100 UCITS ETF USD (Acc)	2.03
STOXX Europe 600 Index	5.38	iShares STOXX Europe 600 UCITS ETF (DE)	4.08
S&P Global Clean Energy Index	4.51	iShares Global Clean Energy UCITS ETF USD (Dist)	4.51
MSCI EM-Index	3.51	Xtrackers MSCI Emerging Markets UCITS ETF 1C	1.05
FTSE All World Index	2.72	Vanguard FTSE All-World UCITS ETF	1.44
MSCI EM IMI Index	2.13	iShares Core MSCI EM IMI UCITS ETF USD (Acc)	2.01

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Development of tradable products on Xetra since the year 2000



- At the end of December 2021, 1,757 ETFs were listed on Xetra. Compared to the previous year, the range of tradable ETFs increased by 139.
- ETFs available on Xetra comprise the following asset classes: equities (1,198), fixed-income (459), commodities (33), Active ETFs (62) and other (5). The category "other" includes volatility and aggregated asset classes. Active ETFs pursue an active investment strategy to surpass the performance of a reference index. Within the asset classes, a distinction is made between the following categories: sustainable ETFs (495), ETFs with focus on a strategy (226) and thematic ETFs (85).
- The 1,695 index ETFs facilitate trading of 1,106 different reference indices²
- In 2021, 208 new ETFs were listed and 69 ETFs were delisted. During the past 21 years, 702 ETFs have been delisted due to market exits of individual issuers as well as due to consolidation or closing of individual funds. It is a sign of healthy market development when issuers close products without sustainable market demand.

² Price, performance and currency-hedged index variants were assigned to the respective reference index and not counted as independent indices.

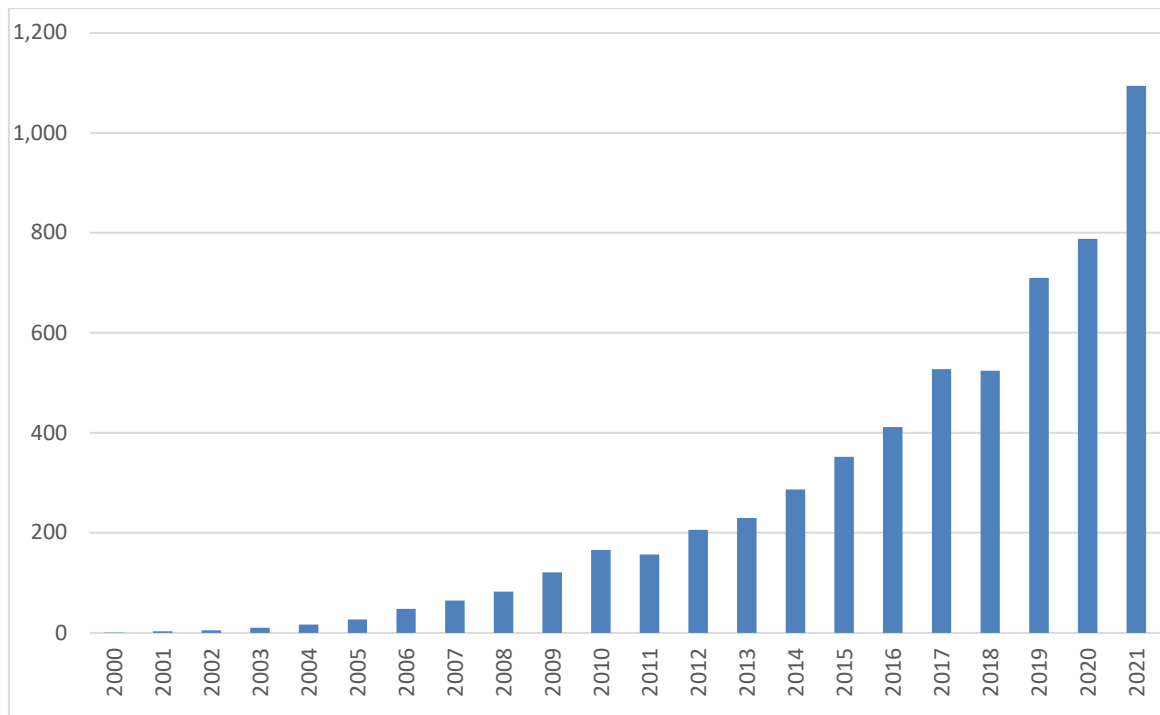
Number of products by issuer

ETF issuer	Number of ETFs per end of 2021
iShares	357
Xtrackers	224
Lyxor	217
Amundi	145
UBS ETF	124
Invesco	105
SPDR	103
EasyETF	63
Deka ETF	53
Vanguard	51
HSBC ETF	39
L&G ETF	37
WisdomTree	36
J.P. Morgan ETF	29
VanEck Vectors	23
HANetf	22
Ossiam	20
Fidelity ETF	17
Global X	17
Franklin LibertyShares	16
Expat	11
Credit Suisse	8
Tabula	8
First Trust	6
PIMCO	6
Rize ETF	6
FlexShares	4
Unicredit ETF	4
Goldman Sachs ETF	3
Market Access	3
Total	1,757

- ETFs by 30 issuers are currently tradable on Xetra.
- Deutsche Börse welcomed two new ETF issuers to Xetra in 2021: FlexShares and Global X.
- The range of ETF products has been growing strongly. The product offering not only includes the major Bluechip-indices such as the DAX® and EURO STOXX 50® but also a wide range of country and regional indices, a variety of sector and strategy indices as well as other asset classes such as bonds and commodities.
- In the fixed-income segment a wide range of government and corporate bonds with different maturities, high-yield bonds as well as money market ETFs are available for investors. Furthermore, first fixed-income ETFs with a strategic component are accessible.
- The current trend is towards indices with a focus on sustainability and special investment themes, so-called megatrends. For sustainability ETFs, investors can choose between several approaches. The best-in-class-approach considers companies across all industries that have been rated best in terms of ESG criteria. Other ETFs exclude companies involved in the manufacture of controversial products such as Nuclear Weapons, Tobacco, Alcohol or the extraction of Coal for power generation. Additionally, there is the possibility to set individual priorities such as fair corporate governance, climate protection or circular economy. For megatrends, issuers are focusing on innovations, particularly in the areas of New Energy, Healthcare, and technologies such as Automation & Robotics, Cybersecurity or Digitalization.

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Development of assets under management for ETFs listed on Xetra (€bn)



- At the end of the first trading year (December 2000), the ETF assets under management in the XTF segment were €0.4 billion; as of the end of December 2021, it reached the record high of €1 trillion. The annual growth rate of the fund assets over the past ten years amounts to 21 per cent.

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Assets under Management by issuer

ETF issuer	AuM in €bn per end of 2021³
iShares	518.38
Xtrackers	141.76
Lyxor	77.55
Vanguard	73.85
Amundi	60.54
SPDR	51.88
UBS ETF	41.18
Invesco	38.36
HSBC ETF	17.17
EasyETF	14.39
Deka ETF	13.22
L&G	11.57
Credit Suisse	6.99
VanEck Vectors	4.96
J.P. Morgan ETF	4.83
Fidelity ETF	3.52
PIMCO	3.11
WisdomTree	2.92
Ossiam	2.65
Franklin LibertyShares	1.35
First Trust	1.11
Goldman Sachs ETF	0.96
HANetf	0.62
Rize ETF	0.45
Tabula	0.37
Market Access	0.17
Global X	0.14
Unicredit ETF	0.10
FlexShares	0.03
Expatriat	0.01
Total	1,094.17

- ETFs have firmly established themselves as a successful investment product. Worldwide, assets managed by ETFs reached a record high of more than €8.8 trillion at the end of December 2021.
- Issuers remain optimistic about growth and profitability in the coming years.

³ Assets under management per issuer product family in relation to ETFs listed on Xetra

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Milestones since the introduction of the segment in 2020

- 11 April 2000: The first ETFs of the underlying reference indices EURO STOXX 50 and STOXX Europe 50 are tradable on Xetra. The issuer was Merrill Lynch International with the LDRS product family, which is today part of the iShares product family of BlackRock.
- 2001: Indexchange, today also part of the iShares product family of BlackRock, issues the first ETF on the DAX index globally.
- 2003: With “iShares eb.rexx Government Germany (DE)” and “iShares € Corporate Bond”, the first European bond ETFs on German government bonds and European corporate bonds follow.
- 2005: The segment is expanded to include dividend strategy and commodity ETFs on DivDAX, EURO STOXX 50 Select Dividend 30 and STOXX50 Select Dividend 30 as well as on EasyETF GSCI.
- 2006: A Lyxor ETF facilitates participation in the performance of the LevDAX. The index is linked to the performance of the DAX with a leverage factor of 2.
- 2007/2008: The first bond ETFs with currency hedging and the first ETFs with inverse performance (short ETFs) are listed.
- 2010: First high-yield ETF on corporate bonds tradable.
- 2011: First issuance of ETFs on equal-weighted indices instead of the traditional weighting according to market capitalisation. Furthermore, the first volatility ETF is listed.
- 2012: The 1,000th ETF becomes tradable on Xetra on 22 August.
- 2014: First ETF with direct access to Chinese A shares listed.
- 2015: First ETFs on Chinese and Indian government bonds (db X-trackers II Harvest CSI China Sovereign Bond UCITS ETF (DR) 1D and LAM Sun Global ZyFin India Sovereign Enterprise Bond UCITS ETF Class USD) are tradable on Xetra. Furthermore, the first nine US sector ETFs are tradable.
- 2016: With the first ETF on Israeli market the iShares TA-25 Israel UCITS ETF investors have the possibility to benefit from the performance of Israeli publicly listed companies. They also have access to Turkish government bonds (LAM Alternatif ZyFin Turkey Sovereign Bond UCITS ETF).
- 2017: The first sector ETF with access to biotechnological and pharmaceutical stocks listed on NASDAQ (iShares NASDAQ US Biotechnology UCITS ETF).
- 2018: First ETFs focusing on companies active in artificial intelligence, digital security or cloud technology: Amundi STOXX Global Artificial Intelligence, iShares Digital Security UCITS ETF (Acc), HAN-GINS Cloud Technology UCITS ETF. In addition, bond ETFs on conditional mandatory convertible bonds (Co-Co bonds) of WisdomTree are listed for the first time. For the first time, investors are able to access ETFs on individual Eastern European countries such as Macedonia, Bulgaria, Croatia or Slovenia from the issuer Expat.
- 2019: New thematic ETFs focusing on innovative technologies and the block-chain ecosystem; 62 sustainability ETFs were listed - a new record.
- 2020: First ETFs on medical cannabis and the CBD industry (The Medical Cannabis and Wellness UCITS ETF and Rize Medical Cannabis and Life Sciences UCITS ETF). This was followed by the first sustainable ETF products based on the Paris Climate Agreement.
- 2021: For the first time, thematic ETFs with a focus on the aerospace as well as hydrogen industries; classification of all sustainability ETFs based on the EU disclosure regulation, which came into force on 10 March 2021.

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60485 Frankfurt/Main
xetra.com

E-Mail: xetra@deutsche-boerse.com
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