

A large, semi-transparent square graphic with a diagonal split from the top-left to the bottom-right. The top-left half is a darker purple, and the bottom-right half is a lighter blue. The square is centered on the page. Two thin horizontal lines, one above and one below the main text, are positioned within the square. The lines are colored with a gradient from cyan to magenta.

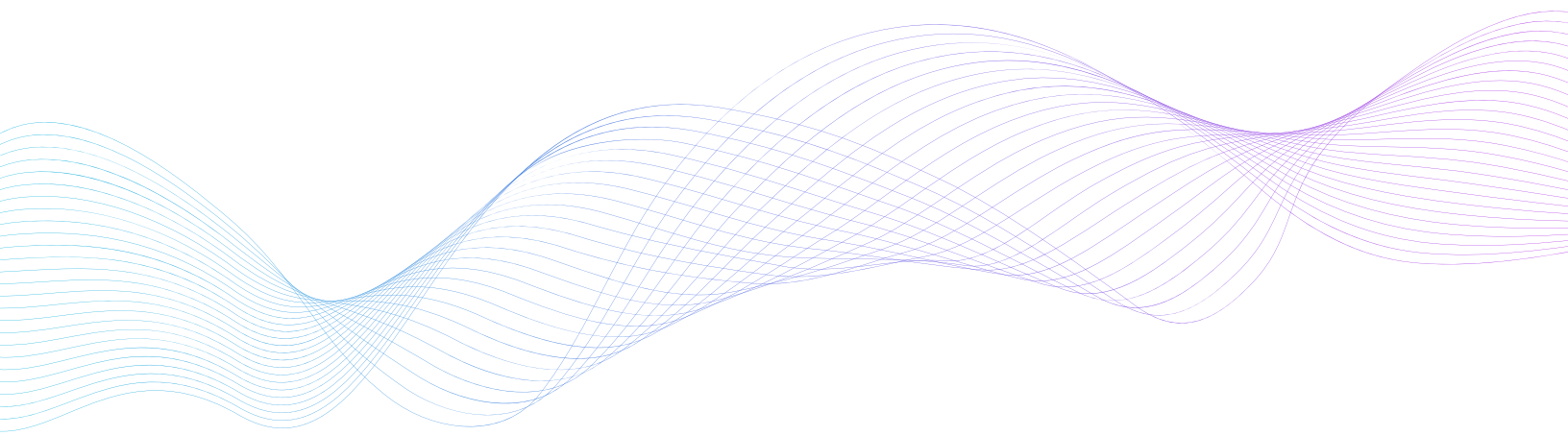
Nasdaq Marketplace Services Platform

For Market Operators

The Nasdaq Marketplace Services Platform

End-to-end SaaS platform purpose-built to operate marketplaces, everywhere

Empowers market infrastructure operators to rapidly activate innovative market expansion initiatives and address legacy transformation.



The Nasdaq Marketplace Services Platform provides a complete, end-to-end service-based platform to operate marketplaces in a cloud environment. Built on top of the Nasdaq Financial Framework's high-performance foundation, the platform provides access to functionally-robust services covering the transaction lifecycle—from issuance of assets and trading through pre-trade risk management, market surveillance, digital custody and settlement.

With flexible APIs and a fully cloud-deployed platform, you can rapidly build out and scale end-to-end business processes, strengthen interoperability across your ecosystem and accelerate go-to-market initiatives. Additionally, because the platform and all of the marketplace functions are delivered as a service, you can simplify the overall management of your infrastructure, with more frequent release cycles, continuous platform enhancement and less resources required to deploy new functionality. With this hurdle removed, you can redeploy your scarce technology resources to revenue-generating and differentiating initiatives, and focus on innovation.



Get to market quickly, efficiently and before the competition.

- More frequent release cycles
- Continuous platform enhancement
- Reduced complexity

Use Cases for Market Infrastructure Operators



Launch New Market Initiatives

The Nasdaq Marketplace Services Platform provides a complete end-to-end platform to get new initiatives, like expansion into digital assets or other areas, to market quickly. By leveraging SaaS to surpass traditional infrastructure, you can reduce capital expenditures and the time it takes to provision hardware and hire additional technology personnel while at the same time still benefiting from Nasdaq's proven capabilities. Additionally, you can leverage the elasticity of the cloud to scale up and down for volumes and participants as the new venture transitions from growth to mature market.



Unlock Efficiency Gains and Reduce Complexity

For market operators with standard trading models and lower demands for latency but seeking rapid deployment, the Marketplace Services Platform provides the same proven and best-of-breed capabilities as Nasdaq on-premise solutions with reduced operational complexity, improved elasticity via the cloud and the potential for true 24 x 7 trading.

How can the marketplace services platform benefit your business?



One service-based platform

- Covers the entire transaction lifecycle, featuring a modular structure with built-in interoperability that enables individual service activation and easy turn on of other functionality or add-ons as needs evolve.
- Can be delivered in multiple cloud environments which allows preservation of your current cloud initiatives and enables you to optimize for a certain geography or use case.
- Easily integrates with ISVs, partners and participants to manage all requirements for your organization.



Purpose-built, SaaS platform

- Built by market operators for marketplace operators everywhere.
- Understands the complex workflows happening across the trade lifecycle, various market models and asset classes, roles of the key participants and the data that flows between them within a cloud environment.



Reduced operational complexity

- Reduces the number of vendors, technology resources and physical infrastructure required to get you up and running.
- Accesses a range of services across the full transaction lifecycle, which reduces the integration complexity for your team and reliance on multiple siloed systems.
- Eases the technical burden on your operations resources, simplifying IT management and decreasing capital expenditures due to SaaS delivery model.



Frictionless on-boarding and maintenance

- Decreases time to market compared to on-prem delivery cycles, provisioning market infrastructure in weeks to months, versus much longer time horizons.
- Continuously enhances performance and functional depth through frequent release cycles, without the need to manage continuous patch cycles.



Proven security protocols

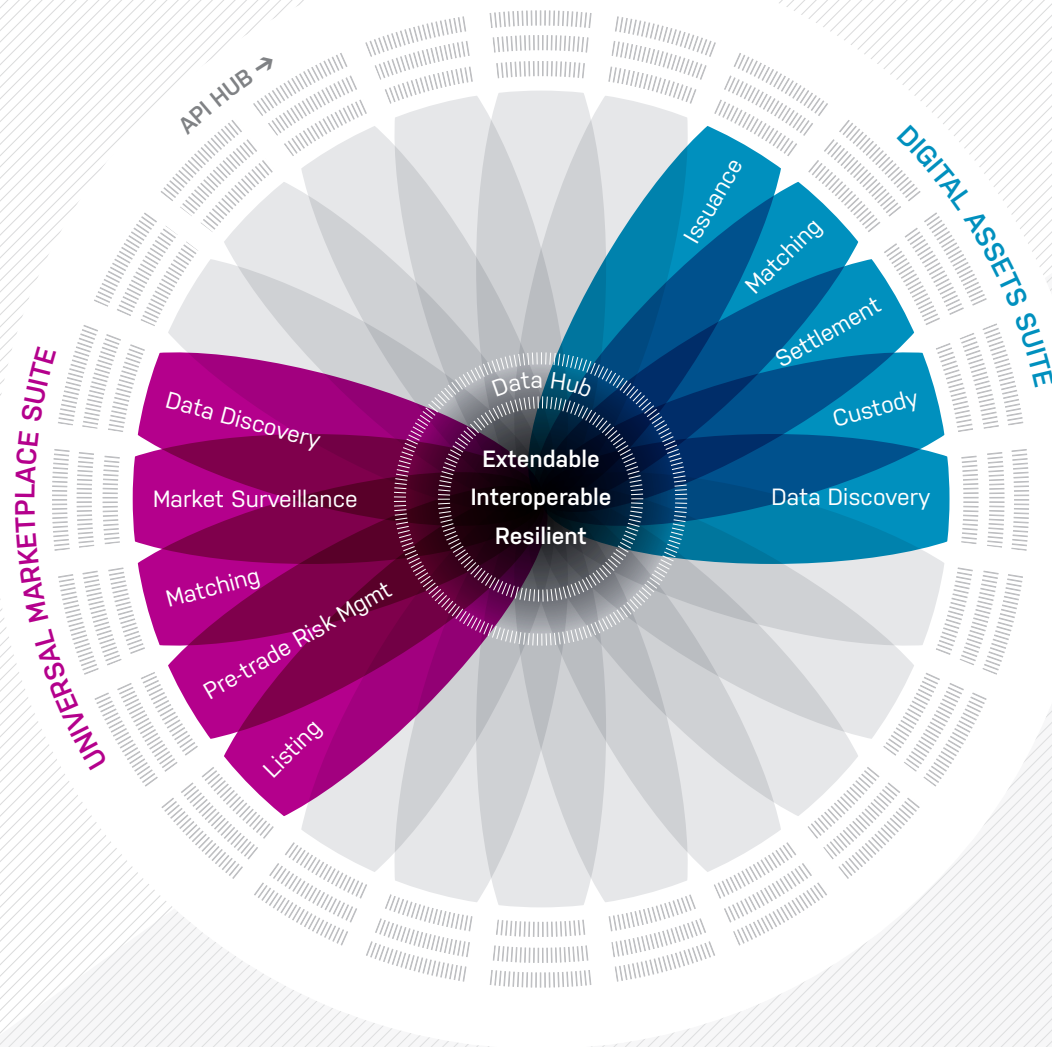
- Leverages the established, proven infosec standards used by 120+ market operators in some the world's most demanding markets and geographies, as well as in Nasdaq's established SaaS offerings.
- Mutualizes investment in information security, meaning that you benefit from the knowledge and experience across platform participants to continually improve and enhance protections.
- Adds protection through the cloud provider's continuous enhancement against known vulnerabilities in a number of industries.



Future-forward infrastructure

- Manages shifts in strategy and scalability as you grow and expand with flexible models that scale as you do.
- Extends your ecosystem technology investment through ease of service expansion and ability to integrate proprietary and third-party offerings.

Platform Architecture



High-performance technology foundation

features high-speed messaging, consistent availability and ability to orchestrate complex data management

Scalable plug-and-play service model

to dynamically expand both capacity and overall portfolio

Support for industry-standard (FIX, ITCH, OUCH) & modern REST APIs

Open platform with robust, standardized APIs enables platform extension across the ecosystem

Deliverable in the cloud environment of your choosing

Product

Data Integrity

- Rules Engine
- Immutable Persistence Layer
- Verification/Audit Tools

Web Interfaces

- Configuration
- Administration
- Verification

API Interfaces

- Data Insert
- Data Extract

Onboarding

- Client Environment Setup
- Client Connectivity
- Technical Onboarding
- Functional Onboarding
- Client Configuration
- Handover Validation

Service Desk

- Production State Support
- Incident Management
- Service Monitoring
- Service Maintenance
- Issue Resolution
- Monthly Reports
- Release Management

The Marketplace Services Platform has pre-packaged suites of services that are designed to meet specific use cases. Market Operators can choose to take the platform with a single service and then add additional functionality via new services as needs evolve or they can integrate proprietary systems or other parts of the broader ecosystem.

Designed with a multi-cloud strategy in mind, the platform is available in a variety of cloud environments allowing us to service the unique needs and diverse geographies across the Nasdaq Market Technology community. Available services on the platform include:

Universal Marketplace Suite

Helps create markets that facilitate price discovery, allow matching between buyers and sellers and support the integrity of the market.

Listing

Service that enables assets to be catalogued and made available for trading

Pre-trade Risk Management

Risk management service that provides guard rails preventing risk limits and tolerances from being breached in order to help ensure continuity and prevent disruption in the marketplace

Matching, Including Market Operations Support

Asset-agnostic matching capabilities that enable trading of many types of goods, services, and assets

Market Surveillance

Market monitoring service enabling identification of manipulative behavior to proactively protect market integrity

Data Discovery

Service that normalizes data and enables query and reporting across cross-silo data to gain insight into data patterns and trends

Digital Assets Suite

Manages the complete digital asset lifecycle from price discovery and matching through issuance, settlement and custody of tokens on a distributed ledger.

Issuance

Creation of digital and tokenized assets on a distributed ledger

Matching

Order management and trade execution tightly integrated with the distributed ledger

Settlement (Delivery vs Payment)

Enables immediate settlement of trades with cryptographic assurance of Delivery vs. Payment of tokens residing on the ledger

Custody

Record keeping of ownership (assets and funds) on a distributed ledger

Data Discovery

Service that normalizes data and enables query and reporting across cross-silo data to gain insights into data patterns and trends

Both Service Suites leverage the API Hub which provides a means to easily discover deployed APIs and learn how to interact and integrate to the services provided through the Marketplace Services Platform.

Where the API Economy Meets the Marketplace Economy

Implementing a platform strategy, you have an opportunity to take advantage of the API economy. You can create new, unique offerings by connecting and combining APIs while also more easily interacting with your participants, investors and partners, and broadening your ecosystem.

The Nasdaq Marketplace Services Platform's open model provides you greater choice and flexibility, easily integrating other providers and ISVs with improved interoperability for your entire ecosystem.



Purpose-built platform



Modern, open REST APIs



API economy



Facilitate interoperability



Optimize use of resources



Enhance innovation

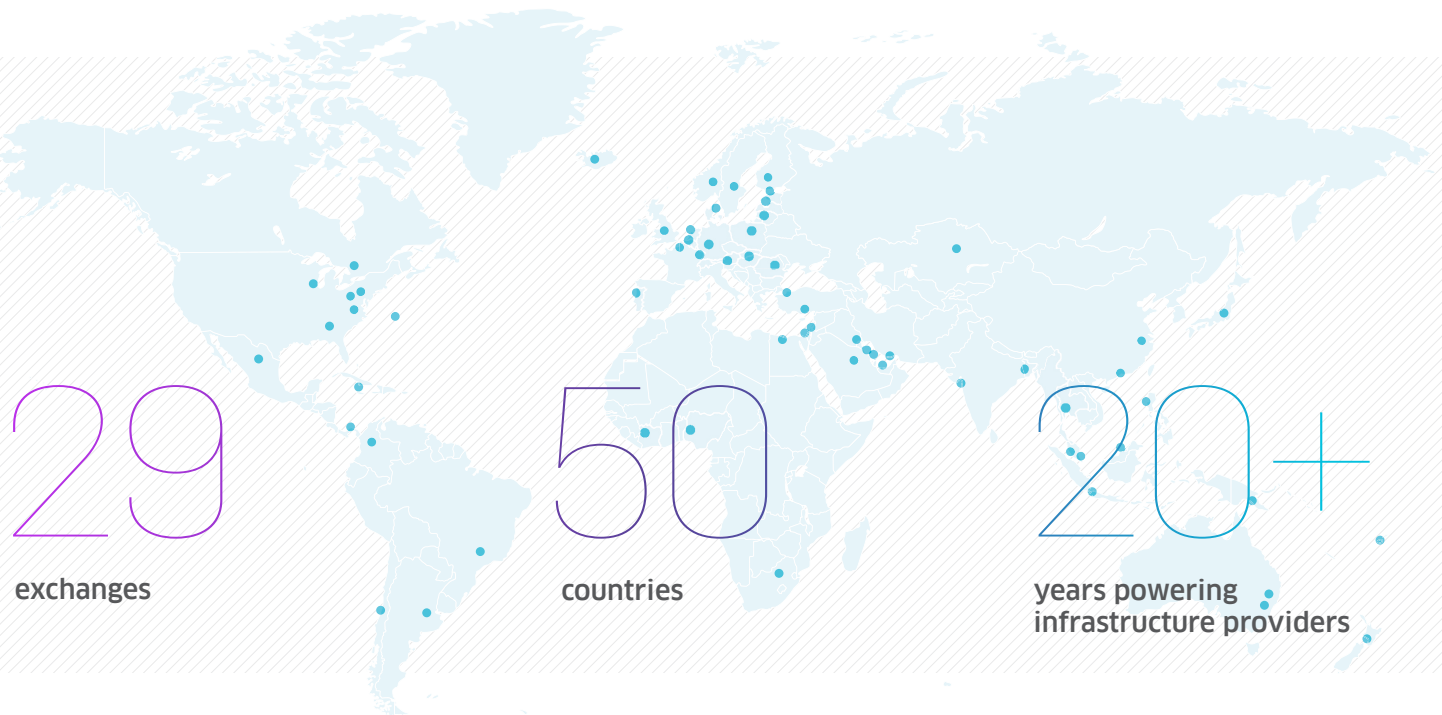


Accelerate marketplace creation



Unlock revenue opportunities

Why Nasdaq?



Technology is in our DNA

No one knows marketplaces better than Nasdaq.

We created the electronic market over 40 years ago and now operate 29 exchanges in the United States, Canada and Europe. In addition, we deliver mission-critical marketplace technology in over 50 countries. We know marketplaces and understand ecosystems from the inside out and outside in.

Our technology and processes are road-tested.

We have 20+ years' experience providing both mission-critical infrastructure solutions and SaaS technology offerings with proven processes, development and delivery methodologies and security procedures and controls.

We have been using the cloud for over a decade.

An early adopter in cloud, we have been innovating and experimenting with use cases in the cloud since 2008. We pioneered usage of customer-managed encryption keys to encrypt data. We launched the first cloud-based matching engine in 2019 and are now delivering extended access to essential market data in the cloud.

We know high-regulated environments.

In the US, we helped build the one of the first SEC 17-a4 books and records system. Additionally, in working with our own markets to migrate to the cloud, we have on-the-ground experience collaborating with regulatory authorities to understand concerns and demonstrate viability of our people, processes and technology strategy surrounding cloud.

Our heritage is disruptive and we never stop innovating.

As one of the industry's pioneers in cloud technology, DLT and machine learning adoption, we can assure you that Nasdaq technology and services are designed to keep pace. Our investments in R&D, partnerships through Nasdaq Ventures and university programming, as well as the relationships we maintain with our listed companies, help us ensure that our offerings are always prepared to take on tomorrow's demands.

Let our marketplace services platform take your marketplace further.

Contact us: Tech@nasdaq.com

Visit us: www.nasdaq.com/solutions/marketplace-services-platform

