

Why Synadia Platform

Shaping the New Wave of Distributed Systems

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Every technology innovation starts with a problem to solve.

Open source NATS.io (“NATS”) was the brainchild of Derek Collison, CEO and founder of Synadia and the architect of NATS. In 2011, Collison was working to release Cloud Foundry, the industry’s first platform-as-a-service (PaaS). But he had a problem. The traditional messaging technology that Collison was using did not meet Cloud Foundry’s performance or stability requirements. The system would simply lock up. The release of Cloud Foundry would be in jeopardy if he did not come up with a solution.

To solve his problem, Collison developed the lightweight, low-latency, open-source NATS messaging solution. The NATS innovative approach was immediately recognized by the open source community and quickly became the connectivity backbone for a wide range of globally distributed applications and services, well beyond its Cloud Foundry roots. Now, the architect of Cloud Foundry and NATS has brought his vision to Synadia in the form of Synadia Platform, adding even more value on top of the NATS foundation Collison originally created.

Sometimes you just get the solution to the problem right.

The NATS and Synadia Platform Combination

NATS empowers developers and IT leaders to accelerate the delivery of globally distributed applications and services across edge, IoT, cloud and on-premises environments. It enables these applications and services with lightweight, scalable and comprehensive messaging connectivity on a simple and versatile, cloud agnostic platform.

Synadia Platform then packages additional software and services with NATS and actually makes the NATS experience even better for developers, by integrating management and observability tools and enterprise-grade security, complemented by expert consulting and support. These capabilities accelerate developer productivity and simplify the operation for distributed applications and services.

This approach modernizes legacy connectivity infrastructure for the cloud-to-edge continuum, and enables real time processing for data analytics and AI at the edge, in the cloud, and on-premises. Being able to cover this breadth of deployment options is driving the need for what are called “nomadic applications” that are workloads written to fit within resource-efficient architectures at the edge and then also deployed on centralized data centers in the cloud or on-premises. Applications written using older messaging and connectivity architectures, which start with a centralized data center in mind, won't fit within the resource footprint at the edge and on IoT devices.

And that's only the beginning.

Definitions

Edge Computing is defined as the information and communications technology (ICT) related actions that are performed outside of the centralized datacenter, where edge is the intermediary between the connected endpoints and the core IT environment. Characteristically, edge is distributed, software defined, and flexible. (Source: IDC press release, [“New IDC Spending Guide Forecasts Edge Computing Investments Will Reach \\$232 Billion in 2024”](#), March 2024)

IoT (Internet of Things) is defined as those things (endpoint devices) that are enabling software control of the physical world used to capture data and connect into many types of networks. (Source: Forrester podcast, [“IoT Benefits And Risks”](#), July 2023)

Industrial Operations



Inteclay: the world's first no-code industrial AI company

Industrial factories worldwide face a critical business problem: shutting down a factory or a production line, even for a few minutes, is costly. Designed to help factories move towards greater automation and true “lights out” operations, Inteclay securely collects data from tens of thousands of sensors in a factory and pushes that data into the cloud using Synadia Cloud.

“Inteclay's platform relies on the robust performance of Synadia Cloud to deliver real-time machine learning insights that optimize industrial processes, making it indispensable for our operations.”

Jonathan Camp, Chief Security Officer, Inteclay

Why NATS, Why Synadia Now

Traditional and even recent container-based application architectures have difficulty meeting the needs of modern distributed systems. Why? Complex integrations and dependencies typical of traditional infrastructures can be expensive and time-consuming to manage. This need for simplicity was another area Collison delivered on with NATS.

Traditional designs for distributed application architectures could not deliver the desired simplicity. They rely on location dependency of components, requiring glue in the form of DNS and protocol interworking, along with close developer and IT operations teamwork to ensure each part of the system is reachable, reliable, performant, maintainable and able to communicate properly. Containerization of applications made this more complicated by introducing service meshes and overlay networks, increasing the requirements placed upon the glue.

Also, the requirement to scale globally and the rapid growth of edge processing and emerging AI applications, as part of Digital Transformation initiatives, are driving the need for a low latency, scalable messaging infrastructure capable of handling vast amounts of data in real-time. Within Digital Transformation, edge and AI are the biggest drivers, even beyond the longstanding IT needs of ongoing application and infrastructure modernization.

Trends and statistics tell a compelling story.

Market statistics

Digital Transformation

IDC forecasts that worldwide spending on Digital Transformation is forecast to reach almost **\$4 trillion** in 2027. They project a compound annual growth rate (CAGR) of **16.2%** over the 2022–2027 period. (Source: IDC press release [“Worldwide Spending on Digital Transformation is Forecast to Reach Almost \\$4 Trillion by 2027, According to New IDC Spending Guide”](#), May 2024)

Edge Computing

IDC predicts that worldwide spending on edge computing is expected to be **\$232 billion** in 2024, an increase of **15.4%** over 2023. (Source: IDC press release [“New IDC Spending Guide Forecasts Edge Computing Investments Will Reach \\$232 Billion in 2024”](#), March 2024).

Artificial Intelligence

According to IDC, worldwide revenues for the AI market from cloud-based deployments of AI platforms software are forecast to grow at a CAGR of **50.9%** through 2028. (Source: IDC report [“Worldwide Artificial Intelligence Platforms Software Forecast, 2024–2028”](#), July 2024).

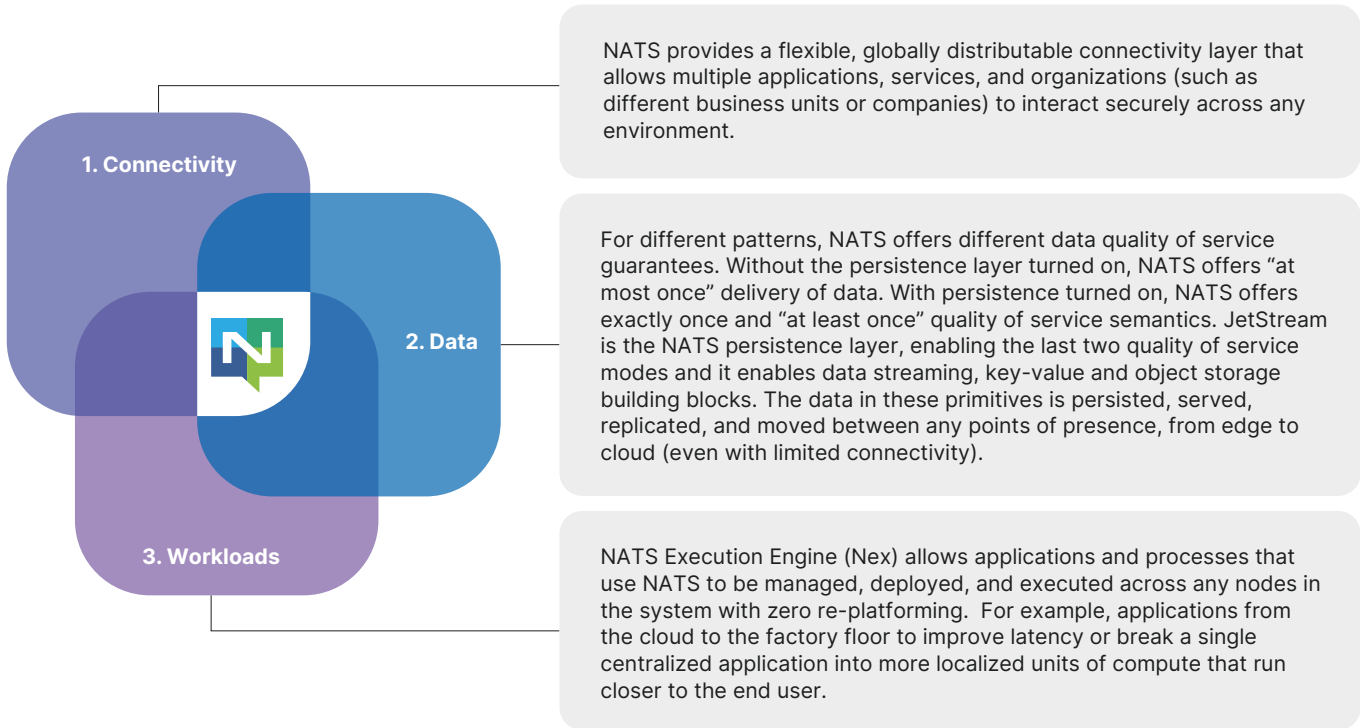
NATS gives developers the tools to address these trends. NATS’ simplicity and high performance make it a popular choice for powering large-scale Digital Transformation projects. NATS’ approach dramatically simplifies distributed application development and ongoing application operations and management by eliminating the need for multiple specialized tools and middleware. Furthermore, it can also serve as a supplement to or replacement for traditional messaging systems as part of ongoing IT modernization projects.

As for edge deployments, NATS resource-efficient footprint now enables applications to process close to where the data is generated, thus saving the roundtrip time to send the data to a central data center in the cloud or on-premises in order to be processed.



This is especially relevant for AI workloads. Being able to deploy AI at the edge allows you to skip the lag of transferring raw data to the cloud where trained AI models are used to recommend actions. Rather, the AI processing can happen locally at the edge and decisions can be made in real time.

To deliver on these capabilities, the NATS approach provides a unified solution for connectivity, data management, and workloads across distributed environments, as follows:



FinecoBank, international specialists in online brokerage

For the last 20+ years, FinecoBank had been using TIBCO Rendezvous (RV) messaging infrastructure to manage its order flow. But FinecoBank developers had a problem – system administration issues. NATS with its scalable, cloud-native, open-source messaging capabilities for developing distributed applications and services is enabling FinecoBank to modernize its messaging operations with a platform it can build on.

“As an international bank, Fineco must consider liability and compliance, as well as performance. We envision NATS easily implemented into critical bank operations to grow reliable and effective services, as well as moving to the cloud.”

Franco Sabini, Head of IT, Trading Online, FinecoBank



Scalability

NATS can easily scale to millions of clients across a global deployment, providing services that can live anywhere and are easily discoverable.



Resilience

Built-in fault tolerance and self-healing capabilities ensure high availability.



Performance

Low latency and high throughput make NATS ideal for real-time applications.

Key advantages of NATS include



Security

A zero trust approach for protection inside or outside the network perimeter with secure interactions between applications, services and devices across multiple clouds, regions and edge environments.



Simplicity

NATS provides a foundation for massively distributed systems, without the need for the glue logic, shim layers, specialized tools and middleware required by other technologies. NATS also has a clean, straightforward API that developers love.



Flexibility

It supports M:N communication across various use cases, including simple messaging, request-reply, complex data streaming, and real-time materialized views, as well as a key-value store and object store.

How Synadia Makes NATS Better with a Unique Approach to OSS

Open Source Software (OSS) offers a range of powerful benefits to users and organizations, including enhanced trust through code transparency, freedom from vendor lock-in associated with proprietary products, and the ability to foster unique relationships where customers can actively contribute and feel a sense of ownership in the products they use. At Synadia, we not only embrace these advantages but also take a distinct approach to our contributions to the OSS community. Synadia sets itself apart in three key ways:



1. Complete: Synadia's OSS contribution of NATS is comprehensive, providing almost everything a developer needs to create their connectivity backbone. It is more than just a messaging and streaming service; it includes other frequently required primitives, such as a key-value store and object store. This streamlines developers' efforts from having to integrate with a number of other building blocks. Other OSS offerings tend to be more narrow in the capabilities they deliver compared to NATS.



2. Fully Scalable: NATS' lightweight design allows developers to start using it for small data center projects and web applications, as well as being ideal for edge and IoT deployments. NATS scales in different dimensions, supporting global distribution and high performance, handling the heaviest demands of the largest enterprise organizations. Often, other OSS projects lack this breadth of scalability.



3. No Paywall: The Synadia NATS OSS project is fully featured at no charge. There is no concept of providing a basic set of features or limited scalability in the OSS version, but then requiring additional fees to unlock other needed capabilities or capacity.

Synadia Platform

To enhance its business-critical readiness, Synadia expands on the open-source NATS by bundling additional software and services to create the Synadia Platform.

This enhanced platform includes not only the NATS core functionality, but also provides:

- Integrated monitoring and observability solutions
- Enterprise-grade security and compliance features
- Comprehensive technical and architectural consulting from NATS experts

These enhancements ease the toil for developers and IT operations, accelerate application deployments and deliver a superior experience for demanding business environments.

As the home for many of NATS' leading OSS maintainers and contributors, the Synadia Platform offers a robust solution designed to meet the complex demands of modern distributed systems.

Whether you need the deep control and customization of Synadia Platform (self-hosted or fully managed) or the simplicity of the global, multi-cloud Synadia Cloud SaaS platform, the demands of distributed systems are well delivered with NATS and Synadia.

Energy



Rivitt - a leader in capturing and managing machine data at the oil & gas edge

Today, Rivitt's simple but effective solution leveraging Synadia Cloud captures machine data from field devices at the edge and moves that data in milliseconds from where drilling begins to anywhere the customer wants it.

"The simplicity and efficiency of NATS-based Synadia Cloud have enabled us to move faster than our competitors, providing our clients with reliable and real-time data, which is crucial in the oil and gas industry."

Miles Hill, CEO and founder of Rivitt.

Not only is Synadia Cloud fast and secure but it took only 90 minutes for Hill to put up the first cloud instance. "Synadia Cloud enriched Rivitt's solution."

Synadia Platform Value to App Developers



Synadia Platform provides developers with a set of foundational features required to build distributed applications, making application development the same experience as running it in production.

With the advent of running applications at the edge, as a software developer you are forced to re-platform when transitioning workloads from a centralized cloud or data center. Thus, if you're building any edge app today, including AI, you should create it with NATS-based Synadia Platform.

With the coming introduction of the NATS Execution Engine ("Nex"), Synadia Platform becomes even more attractive for distributed application software developers. Nex avoids the use of traditional cloud building blocks or even Kubernetes by eliminating the need for service meshes, load balancers and API gateways. This streamlined approach enables developers to focus on innovation without the overhead of managing intricate infrastructure components. Enhanced by Synadia's dedicated support and continuous updates, developers can confidently build scalable, resilient applications ready for the future.

Synadia Platform Value to IT Operations



Synadia Platform offers a compelling platform for building distributed applications without the design, operations, and maintenance headaches. Some of the key capabilities include:

- Access to experts for best practice knowledge on building applications with Platform services and NATS
- Enhanced monitoring and observability
- A management HTTP API

Synadia and Synadia Platform

Synadia fulfills Derek Collison's original vision of enabling organizations to build globally distributed applications with lightweight, easy-to-use connectivity.

NATS is both powerful and efficient, having minimal impact on low-resourced systems, yet simultaneously able to make use of multi-core CPU systems and high performance hardware, enabling heavy workloads in the data center and lower-resourced IoT and Edge use cases. This makes applications truly nomadic as they can run across any of these environments.

By packaging additional capabilities on top of NATS, Synadia Platform benefits developers and organizations with:

- Simplified development of cloud-native and edge applications
- Seamless data flow and processing across distributed environments
- Reduced operational complexity and costs

Next Steps

With Synadia Platform, businesses and developers can focus on innovation rather than infrastructure, accelerating their journey to becoming truly data-driven, edge computing-enabled, AI-powered organizations.

To learn more about how Synadia can transform your approach to distributed applications, visit us for a [free trial](#) or [contact](#) our team for a personalized demonstration.



FREE TRIAL



CONTACT US

About Synadia

Synadia provides a secure, scalable, and high-performance data and communications platform designed for distributed systems. It empowers developers and enterprises to accelerate the delivery of distributed applications. Synadia leverages NATS, a connective technology, to enable real-time, secure communication across cloud, on-premises, edge, and IoT environments. NATS is an open-source platform powering thousands of applications globally. Founded in 2017 by the creator of NATS, Synadia is backed by leading VCs and strategic investors, including Forgepoint Capital, True Ventures, Bold Capital Partners, LDVP, Singtel, Accenture, and Samsung Next. Synadia's diverse customer base ranges from innovative startups to Global 500 enterprises in Finance, Retail, Automotive, and Industrial Manufacturing to innovative startups across FinTech, AI, Green Energy, and Gaming. Learn more at <https://www.synadia.com/>.

About NATS

NATS is a connective technology built for the ever increasingly hyper-connected world. It is a lightweight, low-latency technology that enables applications to securely communicate across any combination of cloud vendors, on-premises, edge, web and mobile, and devices. NATS consists of a family of open source products that are tightly integrated but can be deployed easily and independently. NATS is unique in its simplicity and performance, and as a result powers some of the largest production environments. NATS is being used globally by thousands of companies, spanning use-cases including microservices, edge computing, mobile, IoT and can be used to augment or replace traditional messaging.

