The Ably Data Stream Network

Traditional web architectures and management methods are designed for a static web. The Ably Data Stream Network provides the cloud network and realtime messaging fabric (software) organizations need to meet the swelling demand for realtime apps and APIs.

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Data sheet 2019

Offloading realtime infrastructure requirements to Data Stream Networks like Ably reduces upfront and ongoing engineering requirements, freeing organizations to focus on core engineering goals that drive service development, rather than infrastructure and uptime.

Ship and scale faster and more efficiently with Ably. This is the Ably Realtime Advantage companies like HubSpot, Tennis Australia, and BlueJeans gain by building on Ably.

Operate highly available realtime services

- Globally distributed across 16 physical data centers and more than 175 edge acceleration Points of Presence (PoPs), Ably's Data Stream Network has no single point of failure, consistently high availability, global redundancy, self-healing Client Library SDKs, latency-based DNS routing, binary protocols, and more.
- View network map: ably.io/network.

Realtime messaging fabric

- Our proprietary software solves hard realtime engineering problems such as message ordering, guaranteed delivery, idempotent publishing, intelligent routing, persisted data, message ordering, and stream continuity with 100% message delivery guarantees.
- Before even launching in 2016, Ably's engineers had already invested over 50,000 hours into building a production-ready realtime messaging fabric.
- Stream data anywhere with integrity, low latency, and mission-critical reliability.

Realtime APIs to build rich realtime features

- Ably's realtime APIs expose the entire Ably infrastructure to developers, making it easy to power realtime functionality at any scale. Our APIs consistently enable large engineering organizations to simplify and overcome the most demanding realtime problems.
- Scalable pub/sub channels APIs, APIs to stream over open protocols, APIs to push data to clouds or environments outside Ably's network, and APIs to provide native push notifications.
- We provide a decoupled, standalone realtime messaging fabric that is platform-, language-, and protocol-agnostic.

Deploy, manage, distribute data streams to third parties

- Deploy data streams to Ably's managed infrastructure, manage and control who can access those data streams, and distribute them to third party developers as realtime APIs - so they can consume and integrate them into their own apps.
- A management layer for Ably's DSN that drastically reduces the complexity, cost, and friction of creating self-service realtime API programs that are easy for developers to integrate with. Ably is first to offer this to market.

Reduce technical complexity and ongoing infrastructure work

- Ably takes on the entire realtime infrastructure burden and nuanced engineering complexities inherent in maintaining a high-performance, global data stream network.

Key network numbers

- 16 datacenters and 175+ edge acceleration PoPs
- < 1/10 second (100ms) latency worldwide
- Billions of messages sent each day
- 100s of millions of messages per second network capacity
- Rapidly scale to millions of concurrent users
- 30,000,000+ monthly end users
- 7,500+ developers building on Ably
- High-frequency fan-out to millions of global end-users
- Latency-based DNS routing ensures clients are always routed to the nearest Ably datacenter and PoP
- No single point of congestion: load is dynamically reassigned across the Ably network
- Intelligent routing means realtime messages are always delivered over the shortest route within our service mesh

HubSpot

"We run thousands of services with 100s of daily deploys by autonomous teams. Ably's infrastructure layer supports this agile SoA environment. And the team provide responsive, collaborative support that help us meet our technical, business, and product development requirements."

Max Freiert
Product Group Lead / HubSpot

If you're interested in how the Ably Data Stream Network can help you, get in touch hello@ably.io or visit our website www.ably.io.

Key features	Benefit
Data Stream Network (DSN)	
Message ordering	Ensures integrity of streams by maintaining order of publishing under all conditions
Guaranteed delivery and ordering	Our Quality of Service and reliable message ordering guarantee means data is always delivered in the order it was sent
Binary protocol	Reduces bandwidth and improves encoding and transmission performance
Globally-distributed data center design	No single point of congestion, load is dynamically assigned, intelligent routing means messages delivered with shortest possible route, unlimited scale
Latency-based DNS routing	Ensures users are always routed to the nearest Ably server
Self-healing SDKs	Our client library SDKs ensure service availability issues are tackled in real time by routing directly to alternative datacenters that allow connection state to be recovered
Massive number of Client Library SDKs	Asynchronous and synchronous libraries across every popular platform
DDoS protection	We can detect and deny invalid connection attempts at the edge of our network ensuring core infrastructure remains unaffected
Ably Channels	
Pub/Sub channels with limitless subscribers	Publish realtime data on channels instantly, to a limitless number of subscribers
Device and user presence awareness	Subscribe to events for when devices or users enter, leave, or update state
Message history/persisted data	Data is persisted so users or servers can retrieve historical data days later
Connection state recovery/stream continuity	Continuity ensured over unreliable connections, even when devices become disconnected for short periods of time. No data is lost
Token based access control	Flexible security using API keys, secure Ably tokens, or JWT to authenticate users
End-to-end encryption	256-bit AES encryption means no one, including Ably, can inspect data payloads
Message history/persisted data	Data is persisted so users or servers can retrieve historical data days later
Multiplexed Websockets	Efficient connections to subscribe and publish messages on any number of channels means low latencies
Privilege-based security	Security policies can be assigned to authentication tokens when you create them, giving you control and peace of mind at all times Privileges can be assigned to private keys giving you control over any private keys you share with third parties Policies can assign privileges to access any number of channels, and assign subscribe, publish, register presence, or access statistics rights
Any transport, any device	WebSockets are our preferred transport thanks to their portability and performance. Failing that, we can rely on XHR Streaming, HTTP Polling, and even JSONP where necessary.

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Key features	Benefit
Ably Adapter	
Queueing protocols AMQP and STOMP	Consume data from the Ably Reactor using AMQP and STOMP queueing protocols
Internet of Things - MQTT	A lightweight messaging protocol for small sensors and mobile devices, optimized for low-bandwidth or unreliable networks. MQTT libraries already exist for almost every IoT device around.
Server Sent-Events (SSE)	A lightweight, unidirectional protocol that allows for a request from a client to be held by a server, allowing it to push data to the client without further requests. SSE is widely supported across browsers and devices, so can often be used to stream data from Ably without installing any SDKs
gRPC Get in touch	gRPC is a modern open source high performance RPC framework that can run in any environment. It can efficiently connect services in and across data centers with pluggable support for load balancing, tracing, health checking and authentication.
Proprietary realtime protocols (i.e. Pusher and PubNub)	We support some of our competitors' protocols which simplifies migrating over to Ably, reducing cost and risk
Ably Reactor Integrations	
Message queues	Process, transform and respond to realtime data as it happens. Our message queues allow you to do this the right way from your own worker servers
Firehose	Stream your realtime data published within the Ably platform directly to another streaming or queueing service such as RabbitMQ, Amazon Kinesis, or Apache Storm
Webhooks to your server	Notify your servers over HTTP in real time when devices become present, channels become active, or messages are published. Includes native Zapier integration
Serverless functions	Allow your serverless functions, such as Amazon Lambda or Cloudflare Workers, to be invoked following channel lifecycle events (such as channel creation), presence events (such as members entering or leaving), or messages being published
Ably API Streamer	
Deploy to fully-managed serverless infrastructure	No infrastructure to provision or worry about, reducing your operational overhead. Deploy once to Ably and create reusable API endpoints for an unlimited number of developers to integrate with
Management dashboards	Management dashboards with all the options you'd expect to manage your data streams in a single place: developer registration, permission management, analytics, rate limiting, security, and more
Distribution and end-to-end streaming	Stream data direct from its source right through to wherever it needs to go - be it a smartphone, IoT device, server, or browser
Interoperability and multi-cloud support	Decouple data streaming protocols from end-user consumption to reduce friction and encourage adoption. Help consumers scale and build rich features with ready-made data processing pipelines to link internal and external systems to Ably's network
Data delta streaming	Use data deltas to optimize stream bandwidth and reduce latency by delivering on the newest data