



Esdiac offers a host of business and consumer communications options that enable anyone to stay in touch with their business partners and loved ones around the world. Today, over 80,000 customers pay to use the platform to communicate with family and friends, regardless of location. Through its robust communications system, Esdiac hopes to improve connections on the African continent, which have been hampered by a lack of investment in digital infrastructure.



## International Calling Innovator Esdiac Lowers Infrastructure Costs by 65% with Akka

### Executive Summary

Esdiac stands at the forefront of prepaid international communications, delivering a wide range of services such as web conferencing, international calling, and more. With a presence in over 400 cities globally, Esdiac caters to tens of thousands of customers worldwide. The company was established with a focus on highly accessible and flexible prepaid communication plans, ensuring that international communication services can continue to connect people across the globe. Esdiac's team integrated Akka technology to build its distributed communications network and robust payment system. This strategic integration ensures scalability, reliability, and efficient management of the communications infrastructure, enhancing overall customer experience and satisfaction.

### The Challenge

The founding team of Esdiac, composed primarily of Nigerians and Nigerian-Americans, recognized the rising costs of international roaming and set out to develop a solution to alleviate this financial burden for users. They identified a pressing need among Africans in the diaspora, as well as the global community, for affordable communication options, especially in regions with inadequate digital infrastructure. Esdiac's challenge was to create a cost-effective and dependable method for diverse communities to access affordable calls and stay connected with family and friends abroad. This new solution had to work across multiple regions and grow exponentially as Esdiac's user base grew while providing a cost-effective yet flexible infrastructure. That meant they needed a distributed, rather than centralized, approach to their application architecture.

### The Solution

It was evident there was a market for a solution that could provide a mix of business and consumer communications services—voice, video, and internet—at a lower cost and more flexible in terms of the devices it could leverage for calling and receiving calls.

Esdiac wanted to actively bridge the gap in areas with low infrastructure penetration by collaborating with global mobile network providers. This collaboration ensures dependable connectivity for everyone using only Wi-Fi to activate its international calling app, ensuring widespread connectivity and seamless communication globally. This approach reflects Esdiac's commitment to accessible and affordable international communication that empowers users to stay connected effortlessly across borders.

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“Esdiaac’s strength and reliability as a communication platform is undeniably linked to the robust capabilities of Akka as a platform for scalable growth. We look forward to deeper integration and exploring additional ways to leverage Akka.”

Bassirou Rabo, CTE, Esdiac

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The team began developing a system to serve these market needs. However, after their first 5,000 customers, it became clear the architecture would not be able to scale to meet the demand Esdiac was experiencing. A new event-driven system built using Scala could handle many more calls, but this updated architecture required significant hands-on time to manage. Esdiac needed a new solution capable of meeting its ambitions.

The Esdiac team was familiar with the Reactive Manifesto principles espoused by Lightbend founder Jonas Bonér and Akka as a solution. Its development team knew Akka, a toolkit and runtime for building low-latency, highly concurrent, distributed, and resilient systems, was particularly well-suited for building scalable and fault-tolerant systems that could deliver on their specific design goals.

- **Scalability** - The platform needed to scale as Esdiac added thousands more customers.
- **Extensibility** - Enables Esdiac to quickly add more features and evolve its platform as market needs change.
- **Concurrency** - Allows many separate services to operate in parallel.
- **Reduced Cost** - Deliver a better platform substantially less expensive than their initial architectures.

Akka provided several critical points of differentiation from the current status quo for international applications while enabling the company to scale its customer base and provide reliable and flexible connectivity. Particularly in a market dominated by WhatsApp, Esdiac’s goal was to build a solution that delivered a broader set of functionality with enhanced flexibility in terms of services offered and the devices its users could use and contact.

## The Results

The Akka-based solution Esdiac developed now serves tens of thousands of business and consumer end users. By leveraging Akka, the development team at Esdiac has reduced its infrastructure costs by 65% while handling several orders of magnitude more users and has unlimited room to grow.

Esdiac leverages all Akka modules, including clustering, database sharding, and others. Akka enabled the team to focus on building its value-add, not worry about its application infrastructure. Key benefits the Esdiac team has been able to achieve using Akka as the foundation of its development efforts include:

- **Concurrency and Scalability:** Akka delivers a higher level of abstraction for writing concurrent and parallel systems. In addition, Akka’s non-blocking approach to concurrency allows for better resource utilization and scalability compared to traditional multi-threaded programming.
- **Fault Tolerance and Resilience:** Akka applications automatically restart failed components, ensuring availability—critical to Esdiac’s distributed communications platform.
- **Distributed Application Development Support:** Powerful clustering capabilities that make it easier to build distributed applications and support features like node discovery, load balancing, and data distribution across the cluster.
- **High Performance:** Efficiently uses system resources and enables applications to handle any number of concurrent tasks with minimal overhead.

With Akka, Esdiac has built a powerful platform with a truly differentiated solution to compete and grow its market share in a crowded market.

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