

# Rakuten Mobile: Building nationwide greenfield 4G/5G networks in record time

## The challenge

Rakuten Mobile was a mobile virtual network operator (MVNO) tasked with building a greenfield network across Japan. The company decided to build the first cloud-native, fully virtualized, and Open RAN-based mobile network. Rakuten Mobile had an aggressive plan:

- Build a nationwide 4G/5G network in Japan.
- Connect over **11,000 base stations**.
- Deliver network economics that supported aggressive customer pricing and profitable growth.

## The solution: Rakuten Cloud + Rakuten Symphony

Rakuten Mobile deployed Rakuten Symphony Open RAN software running on Rakuten Cloud, a Kubernetes-based telco cloud platform optimized for edge and core telecom workloads.

### Key solution pillars:

- **Cloud-native containers:** Enabled high performance and efficient resource utilization, allowing more workloads to run on the same hardware.
- **Hybrid VM and container support:** Rakuten Mobile could run legacy virtualized functions (VNFs) and modern cloud-native functions (CNFs) on a unified platform, avoiding silos.
- **Open RAN integration:** Rakuten Mobile embraced a multi-vendor Open RAN ecosystem, including dozens of partners, with Rakuten Symphony orchestrating all.
- **OSS and orchestration automation:** Rakuten Cloud-Native Orchestrator automated day-1 and day-2 operations, delivering zero-touch provisioning for thousands of sites and advanced scripting engine, executing 1 million method of procedures (MOPS) daily.
- **Cloud-Native Storage:** In this high-performance storage with automated application-aware policies, enabling seamless support for stateful 5G workloads.

*“Rakuten Cloud has optimized Kubernetes to offer performance and features needed for telecom applications. This includes the ... extensive automation capabilities that allow us to centralize network monitoring and management so my team can be much more responsive to network issues.”*



**Yuichi Koike,**

Department Manager, Cloud Engineering Department,  
Rakuten Mobile, Inc.

## Business and technical impact

### Fast time-to-market

- Rakuten Mobile built and launched a **full 4G/5G network in just two years.**
- Average edge site deployment time reduced from a minimum of several weeks to **~70 minutes with zero-touch orchestration.**

### Vendor diversity, reduced lock-in

- First operator to prove a multi-vendor O-RAN model at scale.
- Enabled rapid integration of new partners without re-architecting the network.

### Cost savings

- Lowered CAPEX by **redeploying thousands of no-longer-needed management servers** by centralizing network orchestration.
- Lowered OPEX by cutting power, cooling, and manual operations costs.
- Power management reduces energy usage by dynamically scaling CPU workloads.

### Operational agility

- Automated lifecycle management for **tens of thousands of sites.**
- Engineers could implement **new features or patches in minutes instead of weeks.**

## Rakuten Mobile by the Numbers



Rakuten Mobile named top **“cloud-native leader”** (TelecomTV, DSP Leaders Report, May 2025)



**11,000 base stations** deployed in 2 years



**World's largest edge cloud deployment** Proven in production



**1 hr 10 min** Average edge site deployment time



**Fastest 5G upload and download speeds** in Japan (Opensignal, Oct. 2024)



Executing **1 million** method of procedures (MOPS) daily

### Complex Workloads on Cloud



Fully automated network operations



Real-time data processing and analytics



High availability and disaster recovery



AI and Machine Learning for predictive maintenance

## Conclusion: A blueprint for the future of MNOs

Rakuten Mobile's successful network journey illustrates how a greenfield MNO can leapfrog legacy architectures by embracing cloud-native principles. Today, with more than **10 million subscribers**, Rakuten Mobile's transformation demonstrates that cloud-native is not just a technology choice but a business strategy — one that redefines how networks are built, operated, and monetized.

# Rakuten Cloud

For more information:

Visit [cloud.rakuten.com](https://cloud.rakuten.com)

or email [✉ cloud-tsp1@rakuten.com](mailto:cloud-tsp1@rakuten.com)