rSIM®

MARCH 2024

ON

Introduction to Resilient SIM

Always On. Never Off.

rSIM is the world's first truly intelligent SIM card that monitors connectivity and actively switches profile for maximum uptime.

rSIM

The Problem.

Every moment spent offline comes at a cost: loss of reputation; loss of revenue; loss of customers; loss of jobs; and even loss of life.

Mobile connectivity is entering a new era. The growth of SIM-based IoT smart devices, coupled with the continued evolution of mobile data use, is creating a world where companies are increasingly reliant on staying online. Businesses are entwined with technology and, as a result, live in a culture that is 'always-on' – yet in terms of connectivity, the networks that are used are far from 'always-on'.

> Connectivity is the number one issue faced by businesses all around the world.

> Almost 2/3 (63%) of businesses have lost sales or customers due to loss of connectivity.

> 97% of businesses experience some form of connectivity loss every month.

> 93% of businesses have suffered financial impact due to connectivity issues.

> A quarter of all businesses (25%) have been hacked due to connectivity issues.

> Connectivity failures have caused frustration in 83% of businesses and violence in 40%.

> A third of businesses (32%) would develop new services/products with better resilience.

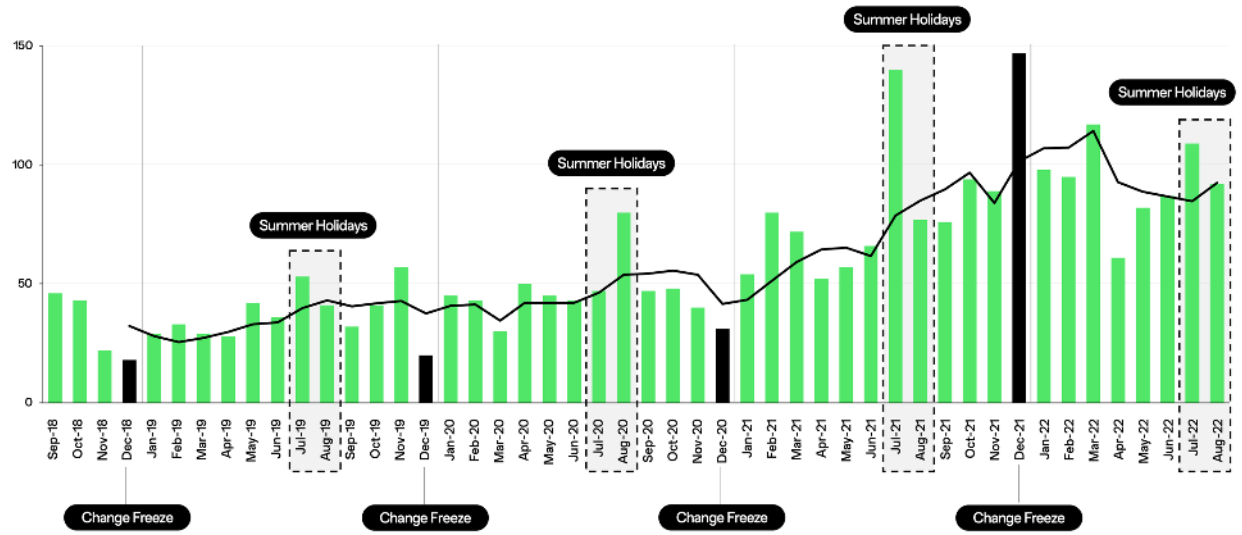
> Two-thirds of businesses (67%) say data connectivity has become more critical.

Key findings involved a total of 3,367 respondent. The process, commissioned by rSIM and carried out by Mortar Research, conducted in February 2024.
More information can be found on our website here: https://www.rsim.com/white-paper

The Problem.

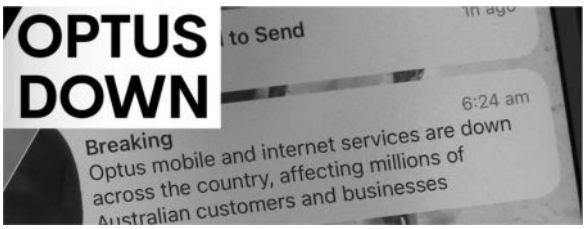
Outages are increasing.

Total # MNO outages by month (Ofcom, UK)



Mobile network outages seem to be on the rise. Recently, Optus, an Australian carrier, experienced a major outage in November 2023 that impacted voice calls, internet access, and even emergency services for millions of customers. Similarly, AT&T customers in the United States faced disruptions in service around the same time. These incidents highlight the vulnerability of our mobile networks. Unfortunately, mobile operators have limited tools to completely prevent outages. Complex infrastructure, increasing network congestion, and external factors like power grids can all contribute to disruptions. While carriers invest in redundancy and backup systems, a truly failsafe network seems like a distant goal.

Outages are affecting larger bases for longer...



Mobile Operators are investing billions to overcome outages...

Rogers to invest $7.7 bn in AI, testing after mobile network outage

July 25, 2022

Rogers Communications CEO Tony Staffieri said the telecom operator will invest C$10 billion ($7.74 billion) over the next three years in Artificial Intelligence (AI), and more testing and oversight, weeks after the company reported mobile network issues.

AI could be leveraged to predict, reduce network outages: Telus exec

Comments come on the opening day of the Canadian Telecom Summit

The Canadian Press
Nov 6, 2023 9:15 AM

The Solution.

Always On. Never Off.

rSIM is the world's first truly intelligent SIM card that monitors connectivity and actively switches profile for maximum uptime.

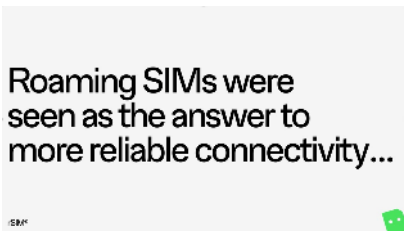
It is device-agnostic and constantly monitors the connectivity. If the connection is lost, rSIM uses patented technology to actively switch profiles to maximise uptime and minimise downtime.

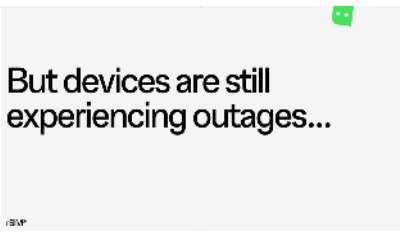
rSIM is GSMA certified, meeting the standards set by Mobile Operators, SIM card manufacturers, and equipment manufacturers.

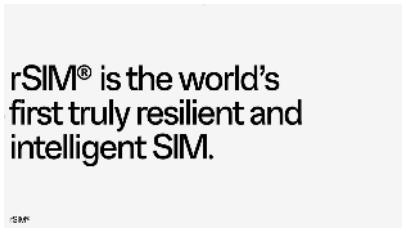
rSIM

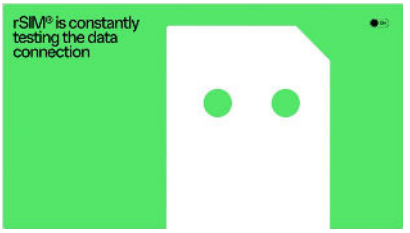
How it works.

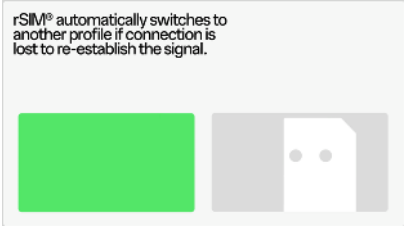
rSIM is the world's first autonomous, device agnostic SIM card capable of detecting outages, providing always on connectivity for those that need an Always On, real-time connection, supporting mobile operators with operational efficiencies and supporting OEMs with simpler device design. rSIM supports the entire ecosystem to provider better connectivity.











The evolution of roaming SIMs.

The rSIM is testing the connection being used by the device every [60] seconds. If the SIM detects period of time where there is no data, the SIM will trigger fallback and switch to the second profile on the SIM to restore connectivity.

rSIM uses roaming profiles when needed to provide further layers of resilience, however, if the core of the provider, providing the roaming profile goes down, rSIM steps in to restore connectivity.

1	**Detecting loss of connection**	rSIM is testing the connection every [60] seconds directly from the SIM card.
2	**Roaming**	When connectivity tests start to fail, rSIM provides enough time for the device to roam a number of times.
3	**Potential network issue**	If after [5] minutes of no connectivity, rSIM will trigger a switch to a second Mobile Operator profile stored on the SIM.
4	**Restoring connection**	rSIM will switch to the backup profile stored on the rSIM to restore connectivity. It will stay on the back up profile for [12] hours before autonomously moving back to primary profile.

[x] Numbers in brackets are configurable

Overcome permanent roaming

Use rSIM to overcome issues of permanent roaming. The primary profile being a local profile, when the SIM leaves coverage, the SIM will detect a loss of connectivity and switch to the backup roaming profile, to temporarily enable extended coverage.

Always On. Never Off.

The significance of losing connectivity extends far beyond inconvenience, into potentially life-threatening consequences. Relying on a single mobile operator core and infrastructure, even with roaming capabilities, poses substantial risks. When any element of the connectivity path falters, the loss of connectivity puts people, property, and profits at risk.

Life

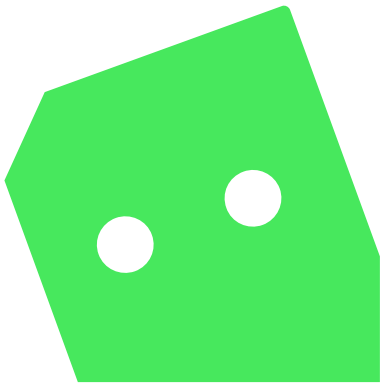
In the Telecare industry, where panic buttons serve as lifelines, reliance on a single-SIM connection puts users at risk. If the device encounters connectivity issues, the user pressing the panic button may find themselves without assistance, underscoring the life-and-death stakes.

Profits

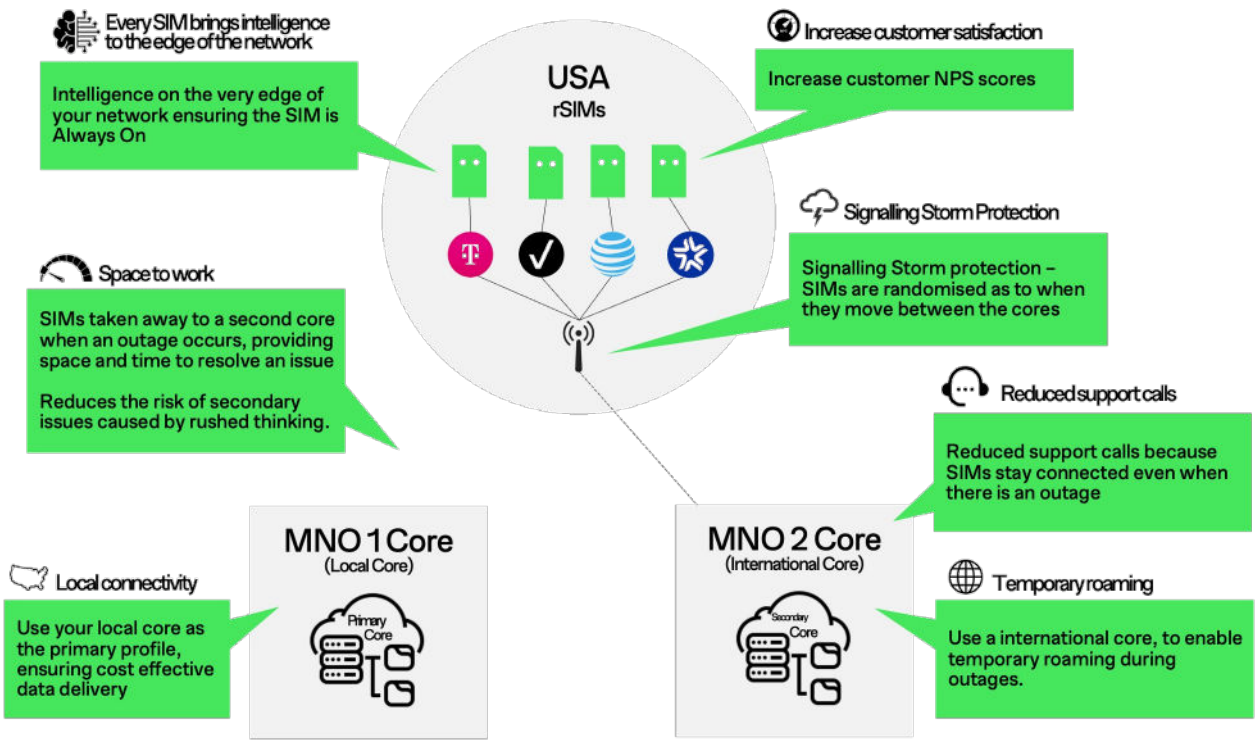
Similarly, in the Point of Sale (PoS) sector, single-SIM card reliance becomes problematic during connectivity issues. With outages often surpassing 5 hours, retailers, restaurants, bars and cafes may face closures, resulting in substantial revenue losses and inconvenience for customers.

Critical Connections

Further examples include Lone Worker systems, CCTV, and EV charging, automotive all grappling with the repercussions of connection loss, where risks are mitigated significantly by adopting rSIM technology. By diversifying paths and leveraging resilient infrastructure, rSIM is a transformative solution, safeguarding connections crucial to the well-being of individuals, businesses, and essential services.



Enhancing Mobile Operator Efficiency.



Edge Intelligence

Each rSIM is testing and switching autonomously between operators cores to ensure uninterrupted service during outages. Autonomous, device-agnostic, standards-based intelligence at the very edge of the operators' network.

Operational Benefits

Reducing the number of SIMs trying to attach to the network during an outage, reduces the chance of signalling storms when the service is restored, shortening outage length for all SIMs.

Optimise Efficiency

Operators can use local cores for cost-effective data delivery and international cores for temporary roaming during outages. Maximise uptime and coverage, cost effectively whilst meeting local regulatory requirements.

Boost Satisfaction

As rSIMs remain connected, support calls are minimised, brand reputation protected, and customer satisfaction maintained.

Benefits: OEMs.

Reduction in hardware & development costs.

Device Firmware	The intelligence for switching operator cores resides on the rSIM, simplifying firmware development
Radio Module	rSIM does not rely on the radio module to identify potential issues with connectivity.
SIM cards	One rSIM, instead of supporting two SIM cards, lower BOM cost.
Connectivity	Cost effective dual core, Always On connectivity.

The GSMA-compliant intelligence responsible for switching operator cores resides within the rSIM, removing the need to support this in firmware development. rSIM doesn't depend on the radio module to detect potential connectivity issues, making the rSIM device agnostic. The device no longer needs to support two SIM slots, which means a reduction in the overall Bill of Materials (BOM). Furthermore, with a cost-effective dual-core design, the connectivity remains 'Always On', ensuring seamless communication without compromising efficiency or affordability. This enhances the product's capabilities and serves as a significant differentiator.

rSIM®

Produced by rSIM

Always On.
Never Off.

Patents and Patents Pending:
United Kingdom (GB 2589724), United States (US 11882614 & US 18/529148), Europe (EP 4035311), Australia (AU 2021227420), Brazil (BR 112022016826), Canada (CA 3170526), China (CN 115777207), India (IN 202227052567), Israel (IL 295642), Japan (JP 2023515277), Mexico (MX 2022010049), New Zealand (NZ 791198), Singapore (SG 11202252427), South Korea (KR 20230061291)