HARNESS THE FULL POTENTIAL OF THE SIM

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ZARIOT
CONNECTED. PROTECTED.

Able Device

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Able Device's SIMbae embedded in ZARIOT SIMs, leverages the full power of SIMs by bringing more control to customers, allowing them to effortlessly create an ideal connectivity solution for their needs. This again shows the real power of collaboration when delivering IoT solutions. I am happy to welcome Able Device to our ecosystem.

DAWOOD GHALAIENY |
CEO, ZARIOT

Success in enterprise IoT projects relies on seamlessly integrating monolithic mobile ecosystems with purpose-built IoT devices. To achieve this, enterprises require flexible solution components for unique needs and cross-platform portability. We look forward to the success of our strategic partnership with ZARIOT and together deliver groundbreaking solutions for a connected future.

ROGER DEWEY |
CEO, Able Device

INTRODUCTION

From optimizing business processes to improving cost efficiencies, the benefits of implementing the Internet of Things (IoT) are immense. Yet, adoption of the technology is still not as prolific as you would expect.

This is partly due to perceived costs, lack of support, customizability, and technical expertise. Motivating calls for the ecosystem to simplify the go-to-market process. Additionally, the solution must also fulfill extensive security requirements.

However, many mass deployments are based on low-end constrained computing hardware where security is often overlooked. This is concerning as IoT devices access and collect vast amounts of highly sensitive data which, if compromised, intrudes on your privacy and safety.

Clearly, striking a balance between improving your IoT offering, while safeguarding your assets and customers, is imperative to maintain a competitive edge in the fast-moving landscape.

Our partnership with Able Device does exactly that, and more. Able Device's flagship product SIMbae™ supports the streamlining of IoT features, device controls, and applications, while embedded in ZARIOT eUICC SIMs.

ZARIOT and Able Device enable the full flexibility and feature capabilities of a telecom operator, for your IoT solution. With security, data privacy and regulatory compliance at the core.

JIMMY JONES I Head of Security, ZARIOT

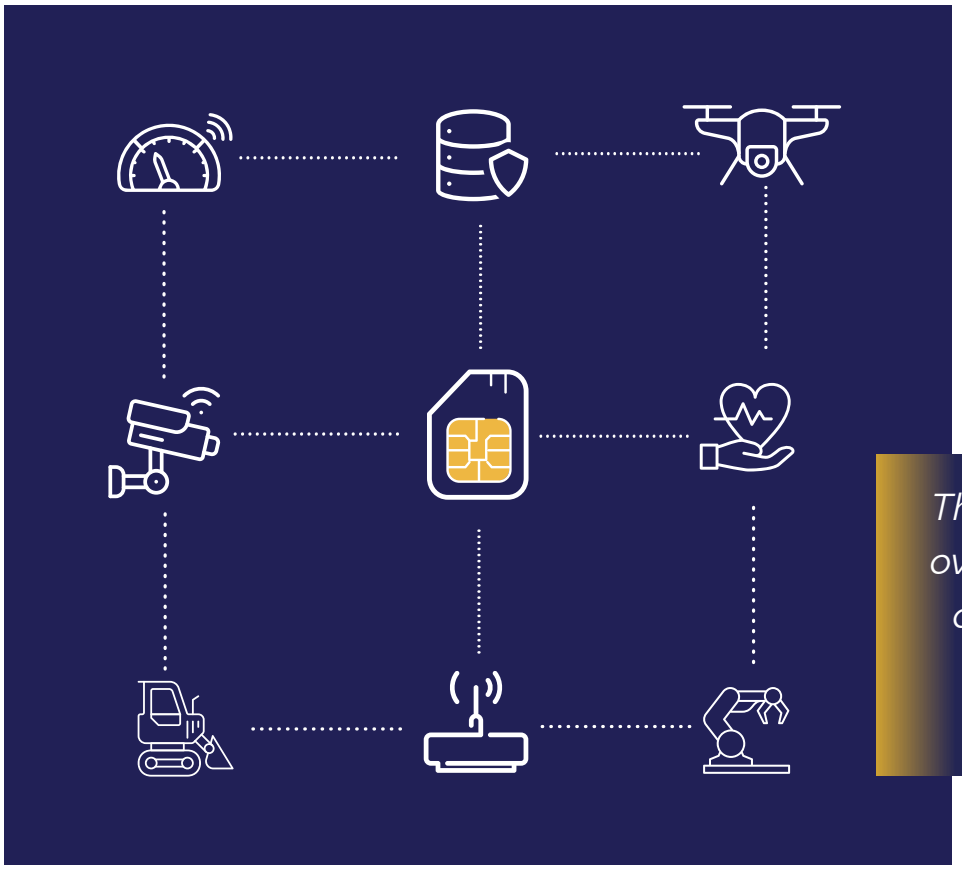
WHY SIMS?

SIMs are a required component in all cellular connectivity and have been the tamper-proof security store for telecom networks for decades. Recent initiatives like the GSMA's IoT-SAFE uses SIMs as root-of-trust for storage of encryption keys. Many IoT devices lack the secure storage environment necessary to handle security processes on their own.

Until IoT-SAFE, there was a lack of a standard approach for authentication and encryption of IoT data using SIMs, facilitating complete end-to-end data security and privacy for enterprises and solution owners.

At ZARIOT, we've fully adopted SIM development and security, streamlining and propelling IoT feature progress. Transforming the SIM from a necessary but underutilized asset, into a secure, intelligent, independent processor. This gives you full flexibility to balance feature evolution and functionality, without compromising on resilience to attacks.

Our extensive experience from our in house SIM specialists, accompanied by additional offerings from our ecosystem partners like Able Device, enables you to effortlessly scale your deployment and update your IoT fleet over the course of its lifetime.



*There are now over **16 billion** connected devices worldwide*

ABLE DEVICE - SIMBAE™

ZARIOT's advanced eUICC SIMs are used as a secure base to host Able Device's embedded patented SIMbae™ applet, allowing you to unlock the full processing power of the SIM.

SIMbae™'s no-code configuration scripts provides you with predefined feature templates, but you can easily customize your own script for immediate implementation and prototyping, all without any coding or Java Card experience. Effectively, with SIMbae™, anyone can generate a SIM applet on plastic, or embedded SIMs.

In sum, you have functionality running on a free compute resource that is also a globally accepted secure element. Cutting down your Bill of Materials (BoM) costs by increasing CPU, while eliminating the need for an added secure chip.

Eliminate hardware overheads, shorten time to market, reduce development costs, and deliver the best quality experience and security to your solution.

SIMBAE™ NODE EDITOR

SIMbae™'s Node Editor is a menu driven, drag and drop development environment with extensive variables and actions for you to create your own SIM applet. Your customized applet can be immediately uploaded to a ZARIOT SIM, tested, verified, and adjusted via a straightforward process.

This gives you an ideal opportunity to innovate or address integration problems between the device and application. Smoothing delivery of the IoT solution or fulfilling problematic Request for Comment (RFC) functionality gaps.

SIMbae™ also utilizes established 3GPP SIM standards, meaning all applications are device agnostic, giving you freedom to deploy on different elements across your IoT estate.

FEATURE OPTIONS

Remote Debugging & Restart

Via the ZARIOT SIM, SIMbae™ provides remote access to restart, diagnose & troubleshoot devices in the field, regardless of location.

Asset location locking

Device security can be assured through device location monitoring that alerts and provides status updates if a stationary asset moves.

SIMbae™ 'Secure it'

Securely update device security credentials over public networks via a Credential Exchange Manager that uses the mobile network & SIM authentication to transfer IoT app security credentials to devices.

Carrier connection control

ZARIOTs regional multi-operator connectivity & SIMbae™'s signal scanning provides connectivity, visibility, and full control to enable customization of a IoT solution.

SIM-Secured Blockchain

Blockchain is a highly secure way to distribute device data. Data is secure once written, but the data source must be 100% trusted. Our solution delivers indisputable proof of device attestation via the SIM.

SIMbae 'Key' Store

Stores keys & certificates based on Key ID. Compliant with GSMA IoT SAFE standards as key storage for TLS protocol. Keys can also be securely updated OTA for ongoing lifecycle security management..

Real time device analytics

Gather “a device eye view” of a deployment with full access and proactive validation of service availability & performance, to help further streamlining monitoring and troubleshooting.

IoT Trust

Based on GSMA’s IoT SAFE standards, IoT Trust embeds Atsign’s patented encryption solution that combines protection across the entire IoT estate, regardless of connectivity type (e.g., cellular, WiFi, wired etc.)

Remote Deactivation

A device kill switch in the event a device is compromised by a malicious attack, or stolen.

Anti-IMSI Catcher

Protect devices from fake networks, info extraction, data interception and denial of service (DoS) threats.

POWER INNOVATION TODAY

SIMbae™ Node Editor's powerful customization potential means you can tailor a cohesive end-to-end IoT solution to your specific requirements, maximizing your design, as connectivity and the SIM are now under your control.

As your IoT goals change and scripts become more complex; you are not on your own. The ZARIOT ecosystem is built on a foundation of transparency and collaboration, with our community's engineers always on hand to assist.

Benefits of IoT

Regardless of where you are in your IoT development cycle, ZARIOT and Able Device can bring your POCs to life, accelerate growth, or streamline global deployments. Allowing you to innovate while protecting your solution from malicious actors, and staying ahead of global security legislation and data privacy regulations.

All features can be added and adapted over deployment lifetime, as your needs evolve.

APPLICATION
Seamless Private-Public Network Switching

The demand for private networks has grown rapidly, but two main problems tend to reoccur.

Your private network island exists in a sea of public cellular coverage. First, your asset - person, thing, or product - often needs to leave the private ringfenced environment and connect to the wider cellular network, but re-establish private coverage as soon as it's available.

Swapping between cells in public networks is forgiving. However, private network coverage is more physically constrained and edges more abrupt. Plus, the public network overlap is likely visible across your whole estate, making seamless switching more challenging.

Additionally, the umbrella of security must be preserved even when the device roams onto the public network. Therefore for private networks, the public cellular coverage is both beneficial and problematic.

Public networks maintain connectivity beyond private network coverage and provides a valuable backup if issues arise. However, powerful public network signals will also create noise that can confuse and delay devices attaching to your environment.

In a mixed estate (e.g. Wi-Fi, cellular), relying on Wi-Fi for public-private handover is equally challenging. Devices may not be equipped to effectively switch between the different access technologies, and scanning multiple signals causes further delays.

Across all these cases, the communication security and integrity of the asset must always be upheld regardless of the access. Whether it is public or private cellular networks, but potentially Wi-Fi and wired assets as well.

> **"Private networks: Standalone IT environments built & managed for organizations such as factories, warehouses, docks, hospitals, or secure facilities"**

HARMONIZING & SECURING PRIVATE-PUBLIC NETWORK ACCESS

*In customer tests, network handover was between **800% to 2400%** faster with SIMbae*

To ensure SIMs fully utilize your private network, the SIMbae™ embedded solution accurately maps your borders to enable precise automated network switching. This gives you the best of both worlds as your asset has access to ZARIOT's expansive roaming agreements, but with seamless connectivity to your private network when available.

The SIM also locally retains knowledge of the network border, only attempting to reconnect when in the local radius. This minimizes network searches on the device and prolongs battery life.

Able Device is also an integral member of ZARIOT's larger ecosystem of partners, who work together to create market leading propositions.

One such collaboration can address the security of a private networks that use mixed connectivity (e.g., cellular, wired, etc.) and can expand that same umbrella of protection to wider public access.

By combining SIMbae with Atsign's unique multi-patented encryption solution, protection can be enabled across your whole IoT estate, regardless of connectivity type or borders.

Every asset from a PDA scanner to core server, mobile phone to logistics tracker, can be uniquely and cryptographically identified, with all communication secured truly end-to-end.

USE CASE
Smart Recycling Bins

We are proud to provide our Signal Checker service to ZARIOT customers who want to understand and optimize their connectivity. By being part of the ZARIOT ecosystem, we are right in front of our target market, and customers have direct access to our services. ZARIOT's ecosystem approach is a significant value add for customers as well as providers such as ourselves.

CHRISTIAN ROUFFAERT I
CEO, Teragence

Private networks are just one limited use case for SIMBae and the ZARIOT ecosystem, the benefits of connectivity flexibilty are evident in numerous examples.

Let us consider a static IoT use case such as a smart recycling bin deployed on the city street. Value can be added to the solution even prior to installation.

While cellular coverage is omnipresent, there can be areas where coverage is less effective. ZARIOT have recently partnered with Teragence, a company that maps mobile signal strength with real granularity, for all iterations of access (e.g., 4G, 5G, NB-IoT, LTE-M).

When combined with the flexible and extensive access provided by ZARIOT's global multi-carrier and multi-technology coverage, Teragence's Signal Checkers enriched insights deliver smarter implementation.

Signal Checker assures the user that the smart bins are positioned at a specific location that maximises connectivity. This speeds up the deployment process and reduces the risks of having to reapply for the appropriate licenses or paperwork to relocate the installation.

Moreover, because Teragence's Signal Checker can provide more detailed insights, the smart bin operator can also better understand the carriers and connectivity options available.

Now the IoT owner can either opt to leave network carrier selection to ZARIOT's native network controls, or using SIMbae™'s scripting potential and detailed location data to create a bespoke carrier and access technology selection list specifically for their device needs.

This network carrier ordering can subsequently be easily adjusted via a simple and quick upload to your SIM (e.g. in the event of a hardware change or software upgrade).

teragence™
NETWORK INSIGHT

AN ECOSYSTEM APPROACH

As IoT and their interdependent building blocks become more diverse and complex, it means mobile operators are no longer fully attuned to your specific needs. Instead of adopting a one-size-fits all approach cellular providers should become more flexible, interactive, and collaborative by opening up their networks to allow IoT implementers to access and utilize all the tools possible to realize their ideas.

By constantly adding to the ZARIOT ecosystem, we give IoT providers the level of control, features and flexibility in connectivity to match that of application or device development.. Our ecosystem provides support from design through testing, deployment and long-term maintenance.

To maximize your IoT investment, it is possible to combine Able Device's features with expertise and services from other ecosystem partners. For example, cybersecurity experts Binare,io and Seven Shift can help you secure, deploy, administer, and update your solution over your IoT device lifetime which can now last between 10-15 years.

Considering the extended lifespan of an IoT device compared to other IT equipment, having continued support and control throughout the deployment lifecycle is crucial. It is difficult to predict how the IoT landscape will change in coming years, **so make a decision today that ensures your connectivity can evolve and adapt with your needs.**

ZARIOTs ambition for all our customers is a tool kit of features from collaborating ecosystem partners, working cohesively and transparently with their various expertise to power your shared goal.

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