



Kaleido Intelligence Connectivity **CHAMPION** Vendor 2024

A KALEIDO VENDOR HUB BRIEF: ESIM & CMP



TATA COMMUNICATIONS

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About this Brief

The Kaleido Vendor Hub provides the industry's most thorough assessment of roaming vendors' product offerings.

Kaleido's Vendor Hub Report offers the industry's most comprehensive evaluation of connectivity vendors, analysing their product strengths, strategic roadmaps, and competitive positioning. Updated annually, the report is the result of over 500 hours of primary and secondary research conducted across five months, ensuring a thorough and unbiased assessment.

The 2024 edition features an expanded scope, assessing 39 vendors across three key product and service categories: CMP (Connectivity Management Platform), eSIM connectivity, and eSIM RSP (Remote SIM Provisioning). Each vendor receives category-specific scores and detailed profiles, providing clear insights for competitive benchmarking and market positioning.

Kaleido's methodology focuses on evaluating vendors' product excellence, innovation, problem-solving capabilities, and alignment with current and future market needs. This approach ensures fair comparisons and an impartial analysis, enabling businesses to make informed decisions based on vendor performance.

CMP & eSIM Trends & Outlook

In 2025 and beyond, operators face a dual challenge: transitioning to future-proof 5G systems while maintaining high standards of interoperability, security, and service quality in a fast-evolving landscape.

Several interesting trends have been underlined as a result of Kaleido's latest research into the CMP (Connectivity Management Platform) market during 2024. It is certainly the case that nearly all players that Kaleido directly engaged with during the study have placed a strong emphasis on development of either new features of their platforms, or their infrastructure, in order to meet changing market demands. This is undoubtedly encouraging, given Kaleido's own observations of increasing customer sophistication and complexity on the market.

Security and transparency are emerging trends within the CMP space. To varying degrees, several providers have implemented network layer security tooling for customers, with ML/AI utilised as a key supporting technology to identify anomalous behaviour. Meanwhile, observable metrics in the context of CMP utilisation, either via the GUI or the API, are viewed as increasingly important features of transparency and overall solution security.

Abstraction of complexity is perhaps an apt phrase for some of the ongoing work among providers, in the context of multi-operator connectivity sourcing. Several CMP providers have recognised the need for single pane-of-glass management for their customers, although the level to which this has been achieved through their efforts is highly variable. Nonetheless, this work suggests a broader market recognition that even the largest MNO providers cannot 'go it alone;' interestingly, similar observations can be made at the wholesale level where an increasing number of large MNOs have partnered with other CSPs to support end-customer international connectivity requirements. Meanwhile, Kaleido observed several interesting capabilities among providers where configuration of traditionally-complex solutions has been simplified through innovation, which indicates that the 'long tail' of enterprise IoT customers are increasingly sophisticated

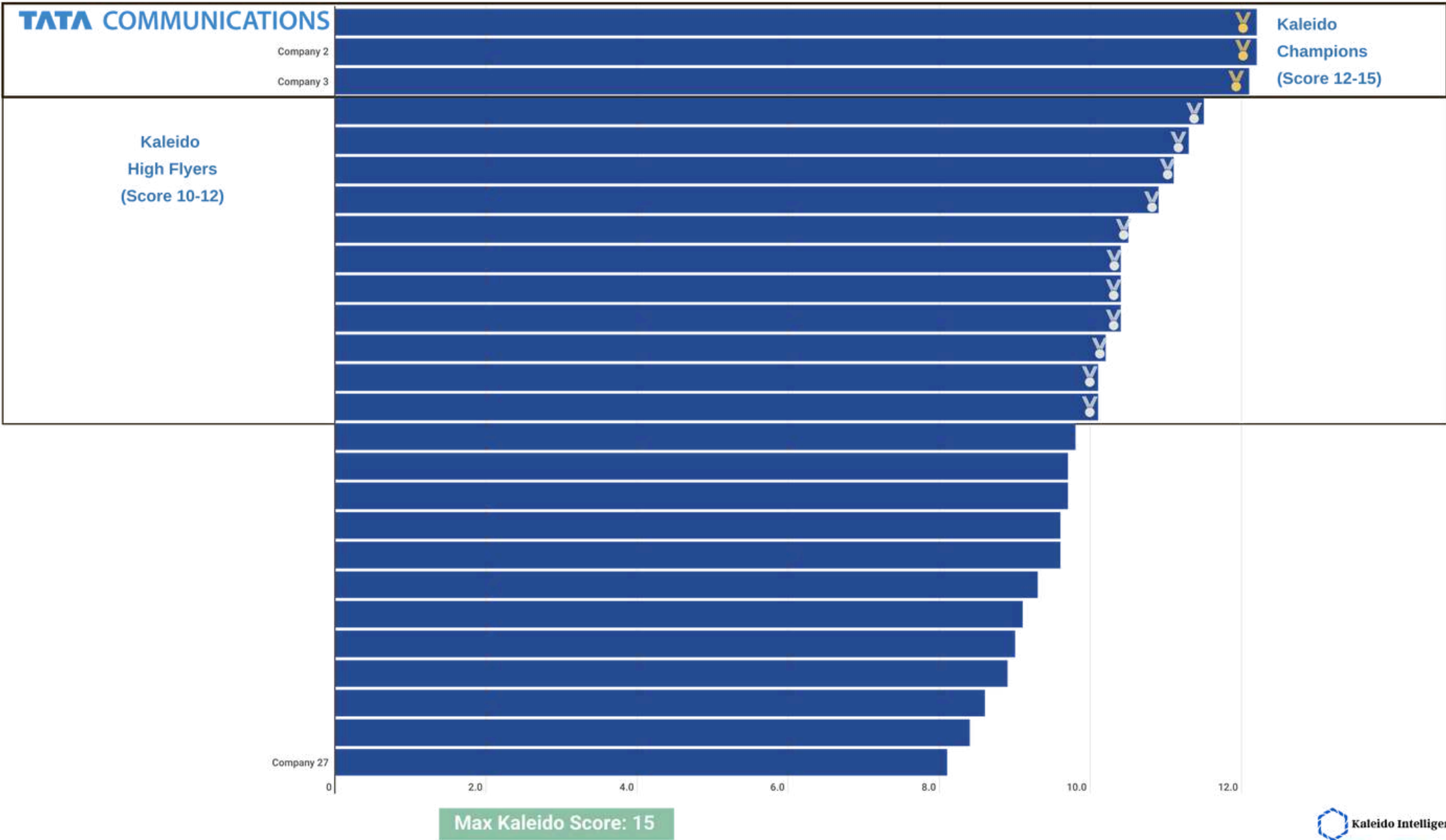
CMP & eSIM Trends & Outlook

Meanwhile, eSIM is seeing strong growth within the consumer arena, with more smartphones capable of supporting the technology in addition to increasing availability of eSIMs through domestic MNOs as well as travel eSIM providers. This, coupled with the impending commercialisation of SGP.32 platforms, means that scalability is now a hugely important factor in RSP providers' development considerations, with redundant cloud-based instances largely viewed as the most optimal way forward. Although development of the SGP.41/42 specification for in-factory provisioning of eSIM/iSIM profiles has evidently hit some roadblocks, it is notable how all leading RSP players have a key focus towards supporting the concept, either through the GSMA specification, or via their own pre-standard solutions.

On the connectivity side of the analysis, optimisation remains at the forefront of many providers' efforts. Most providers have extended either the number of eSIM profiles capable of being managed by their platforms, or have extended local and regional connectivity options through sponsored roaming or IMSI donation. Where providers are not directly undertaking such a strategy, other approaches are being taken to extend coverage, or service delivery across international markets via connectivity management platform integrations and abstraction approaches. Overall, BYOC (Bring Your Own Connectivity) is increasingly supported by providers, offering customers a greater level of flexibility.

Kaleido Connectivity Vendor Hub 2025: eSIM Connectivity

Kaleido Score Summary for eSIM Connctivity , Tata Communications: 12.2/15



"Kaleido champions demonstrate leading product range and the highest quality of service to enable operator success"



Source: Kaleido Intelligence Connectivity Vendor Hub 2025



Kaleido Intelligence

#1 CHAMPION eSIM Connectivity Vendor

"Kaleido Champions demonstrate leading product range and the highest quality of service to enable operator success"

Kaleido Intelligence Vendor Hub | January 2025



Kaleido Connectivity Vendor Hub 2025

eSIM Connectivity Score Summary

"Tata's ownership of Oasis means that it is well-positioned to launch support for SGP.32 use cases when compliant platforms are ready to be commercialised. Over the past year, the company has added an auto APN configuration feature to its solutions, enabling zero-touch SIM activation across its roaming destinations. Tata is able to claim a key point of differentiation in eSIM OTA campaign optimisation by virtue of its SIM applet combined with ML/AI analytics to determine the best time to execute any OTA profile management actions."





Kaleido Intelligence

HIGH-FLYER

Connectivity Management Platform Vendor

"Kaleido High Flyers demonstrate innovative and high quality product portfolio, and are well positioned for continued success"

Kaleido Intelligence Vendor Hub | January 2025



TATA COMMUNICATIONS

Tata Communications: Profile Analysis

Tata Communications (Tata) offers customers considerable reach through its cellular connectivity solutions. The company operates its own global core network infrastructure which, alongside a significant number of relationships with MNOs globally, allows it to offer global IoT connectivity services. This is supplemented by a strong depth of carrier roaming services, including IPX, steering of roaming, signalling services, clearing and settlement, and regional breakout services.

As of July 2023, Tata is the sole stakeholder in Oasis Smart SIM. The acquisition means that Tata is able to integrate Oasis's eSIM Subscription Management technology with its own connectivity offering, resulting in a combined eSIM connectivity, IoT connectivity and management and eSIM Subscription Management capability through a single platform, dubbed Tata Communications MOVE. This platform extends beyond pure connectivity management, the company having developed specific platform solutions for manufacturing, automotive, supply chain, airline, sports and media customers.

Tata offers customers a CMP supported by a core network with distributed components located across several countries in 5 continents around the world. These are supported by the company's SS7 signalling, IPX, MPLS and voice network, with the CMP integrated with Tata's global IP network and cloud connectivity services. The platform is built on a modular architecture, allowing customers to select various components via a piecemeal approach, should they already have existing investments in other solutions. Recently, the company has been engaged in architecting the platform to be fully cloud-native, deploying microservices and containerisation. In turn, this has enabled Tata to launch data lake capabilities. While the platform is commonly sold to direct customers through the company's MVNO capabilities, it also enables CSP customers via the platform, with Tata noting that the Oasis Smart SIM acquisition has helped facilitate this approach.

Tata Communications: Profile Analysis

In Kaleido's analysis of the MOVE platform, the company showed particularly strong capabilities in the realm of reporting and diagnostics, fleet management in addition to OTA capabilities. Where reporting is concerned, dashboards are supported by Tableau , with the new data lake capability providing enhanced data access, aggregation and analytics capabilities, although this is delivered through a separate portal. These analytics offer customers a remarkable level of detail covering connectivity quality according to location, mapped RAT connectivity types, device QoS metrics including analytics on top devices not meeting specific thresholds, as well as further analytical capabilities surrounding cell ID level QoS analytics.

Additionally, the solution provides graphical analysis of potentially anomalous device behaviour to enable customers to investigate further, if required.

These data metrics, in addition to others (such as potential costs) are combined with the company's ML/AI capabilities to support reliable OTA operations, such as optimising when FOTA/SOTA updates should be actioned in addition to eSIM profile management actions.

With expertise supplied by its subsidiaries (NetFoundry and Ijura), Tata is able to offer robust security tools for advanced customers, enabling threat detection and mitigation capabilities integrated into MOVE. Potentially compromised devices can be identified and isolated from the reset of the network, with customers alerted to any such events.

Meanwhile connectivity resilience is assured through the deployment of Tata's SIM applet, with data utilised to drive aforementioned capabilities surrounding QoS and OTA capabilities.

Tata Communications: Profile Analysis

In the context of eSIM connectivity, the company supports both SGP.22 and SGP.02 use cases, with the underlying platform capable of onboarding consumer devices through a variety of mechanisms. Over the past year, the company has added an auto APN configuration feature to its solutions, enabling zero-touch SIM activation across its roaming destinations. Connectivity is enabled through integrations with some 30 direct MNO partners, with the company's strategy focused on expanding this, as well as upgrading its GSMA membership status to enable the direct management of roaming hub services. Meanwhile, Tata's ownership of Oasis means that it is well-positioned to launch support for SGP.32 use cases when compliant platforms are ready to be commercialised.

Connectivity enablement in commercially or regulatory challenging markets is well-addressed by the company through a combination of eSIM profiles and local IMSI ranges.

As the roadmap for profile acquisition is executed, the company will be able to localise connectivity in nearly all markets globally that apply regulatory or commercial restrictions related to permanent roaming. Meanwhile, global connectivity is supported through these capabilities in addition to a 901 IMSI range and sponsored roaming agreements. As noted earlier, Tata is able to claim a key point of differentiation in eSIM OTA campaign optimisation by virtue of its SIM applet combined with ML/AI analytics to determine the best time to execute any OTA profile management actions.

Tata is able to directly offer eSIM Subscription Management services through its Oasis acquisition. Oasis has emerged as a highly innovative player in the eSIM subscription management space, with the company reporting strong growth in transactions across its consumer and M2M RSP instances.

Tata Communications: Profile Analysis

Oasis has put considerable effort into solving issues encountered by some customers with interoperability between RSP providers, by offering an abstraction layer for simplified integration with different players' RSP platforms across the market via its eSIM hub product, CRP. IoT connectivity service providers have repeatedly cited interoperability issues to Kaleido for this research as one of the key sticking points for slowing eSIM traction on the market. The hub also offers business automation logic, profile lifecycle management tools, autonomous network switching, and connectivity orchestration.

Work towards supporting SGP.32 use cases is well underway, with Oasis having developed its own eIM with support for both IPAe and IPAd deployment modes. POCs are underway with selected key customers in order to prepare for commercialisation in 2025. The company continues to develop towards support for all eSIM SGP.32 OTA workflows and other areas related to orchestration, which leaves it slightly behind some players in this analysis.

To enable flexibility in the customer experience, the company offers tooling for profile customisation according to requirements, while the platform is capable of adjusting profiles delivered to the target device depending on its capabilities, such as 5G SA support. Meanwhile, the GUI of its management platform has been updated to improve the user experience for multi-tenant solutions, in addition to adding increased self-service capabilities.

eSIM subscription management solutions are supplemented by an extremely broad range of SIM applets covering services such as diagnostics, multi-IMSI, on-SIM profile management, QoS, IoT SAFE, IMEI tracking as well as device interoperability and polling applets. Its applet development team is additionally well-positioned to receive outsourcing requests from customers to develop custom Java Card applets.

Tata Communications: Profile Analysis

Customer market entry is encouraged through a business model that eschews Capex and maintenance costs while applying a minimum installation fee. Under its SaaS model, customers are only charged if an eSIM profile is being used, serving to reduce ongoing costs further. Furthermore, smaller customers can benefit from a low entry fee cost coupled to an affordable annual package deal.

The company has developed several innovations that offer differentiation in the context of accelerating eSIM traction on the market. The first of these is its Cloud SIM, dubbed CeSIM. Leveraging a secure GSMA-certified application server, a virtual SIM wire hosted in the application server, CeSIM can be installed via a lightweight Java application at any stage of product development. The solution is aimed at provision of on-demand, temporary connectivity for use cases such as in-field software updates or factory use cases where testing requires data connectivity for systems validation, albeit on a temporary basis.

Kaleido Vendor Hub Methodology

The Kaleido Vendor Hub provides the industry's most thorough assessment of roaming vendors' product offerings.

Kaleido's approach to competitive analysis ensures that all roaming vendors have an equal opportunity to showcase their technical proficiency and ingenuity. This approach enables operators to understand vendor positioning based on service offering strengths and innovation rather than relying on existing popularity.

Kaleido's method entails categorising vendors based on their product excellence, recognising each company's distinct market positioning, problem-solving skills, innovative prowess, and their ability to align with current market needs and future demands.

Kaleido conducted the following process to achieve this:

- Kaleido's comprehensive research involved both primary and secondary methods, aiming to gain insights into the positioning of companies within the roaming sector. This encompassed interviews with numerous well-established roaming vendors and wholesale service providers. The approach incorporated research, interviews, product inquiries, and demonstrations to ascertain the vital attributes of these players, including their corporate and market positioning, technical product and service offerings, market presence, key advantages, and potential avenues for future development.
- Companies were extended invitations to participate in responding to pertinent questionnaires pertaining to product categories. In addition, telephone interviews were conducted to request and consolidate information regarding their product offerings and capabilities.

Kaleido Vendor Hub Methodology

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- In the absence of specific input from these vendors, we rely on publicly accessible information found in whitepapers, press releases, partner interviews and case studies available on the vendor's website. This ensured a more up to date understanding of their offerings and capabilities.
- Further to service provider interviews, Kaleido conducts interviews with ecosystem players in addition to large-scale enterprise surveys on an ongoing basis to determine their needs and requirements. This enabled us to better understand the strengths with real-world needs as perceived by both service providers as well as customers, especially from a technical perspective.
- Our goal is to ensure a comprehensive and well-informed evaluation, seeking to leave no gaps or missing details in our assessments. This meticulous process is essential for developing an opinion that is consistently supported by a widely accepted and comprehensive market research methodology. It is crucial to underscore that our commitment lies in providing the most accurate and well-rounded insights to facilitate informed decision-making for all stakeholders involved. It is important to note that Kaleido does not endorse any operator, vendor, or service mentioned in this research and market study.

About Kaleido Intelligence

Kaleido Intelligence is a specialist consulting and market research firm with a proven track record delivering telecom research at the highest level. We enable the worlds leading MNOs, MVNOs and Service Providers with detailed, authoritative insights that inform business success.

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Get in touch with the Kaleido team for more information on the methodology, scoring criteria list and research sources or to request a sample.

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