

# GLOBAL MOBILE AUTHENTICATION MARKET 2023-2028

Competitor Leaderboard

Prepared for Tata Communications





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## 1.1 Why Read this Report

This section details several vendors active in the mobile authentication space. This report is not intended to provide comprehensive coverage of all the vendors operating in this market, but introduces the reader to 22 leading mobile authentication vendors that Juniper Research considers leaders in the market.

Mobile authentication is a growing phenomenon, with services such as shopping and banking increasingly moving online. Users require more secure platforms to access such services and to store personal information. With the development in AI and advanced software, fraudsters have found smarter ways to manipulate users' data to gain access to personal accounts. Therefore, companies must implement multiple authentication measures, such as biometric authentication, to protect its customers and userbase from identity theft.

Juniper Research is a European-based provider of business intelligence. We specialise in providing high-quality data and fully researched analysis to manufacturers, financiers, developers and service/content providers across the communications sector. Juniper Research is fully independent and able to provide unbiased and reliable assessments of markets, technologies and industry players. Our team is drawn from experienced senior managers with proven track records in each of their specialist fields.

## Key Mobile Authentication Market Takeaways

Juniper Research has identified three key trends for the mobile authentication market. These are outlined below:

### SMS to Account for the Greatest Revenue from Authentication Revenue Across the Next Five Years

Juniper Research forecasts SMS to remain the dominant channel for authentication over the following five years, owing to its ubiquitous nature and widespread use across many regions. The forecast predicts the total operator-billed revenue from SMS authentication will reach \$56 billion by 2028, an increase from \$40 billion in 2023. Whilst there is set to be disruption from the development and roll-out of newer authentication technologies, these are not enrolled over an operator network; therefore, SMS will remain dominant in the market.

Furthermore, users will continue utilising OTP SMS as it is a more trusted service and easily accessible to all mobile device users, not just smartphone users. For example, subscribers in developing regions such as Africa & Middle East maintain a major abundance of featurephones whereby biometric authentication is not enabled; therefore, users still heavily rely on SMS to send authentication codes across these devices.

### API-based Authentication Methods Will Help Promote Operator Relevance in the Market as SMS Use Declines

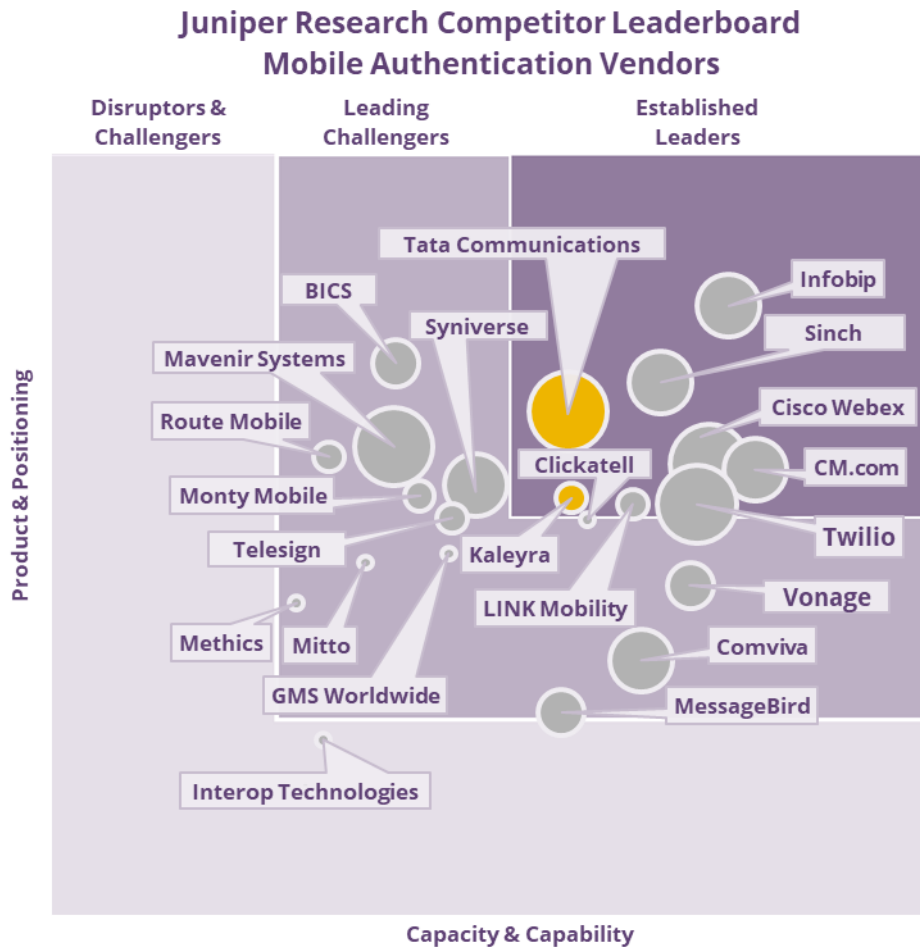
Juniper Research advises operators to focus on promoting newer API-based authentication methods such as Silent Auth, OAuth and Number Verify in order to continue monetising on authentication traffic across its network. Furthermore, API solutions are more secure, enabling operators better vision of the traffic and thus providing the tools to more effectively detect, monitor and block unauthorized or suspicious traffic across a network, in turn, protecting operator revenue.

### By Partnering with Established CPaaS Players, Operators Can More Effectively Promote Authentication

CPaaS players can benefit operators by taking advantage of their existing relationship with enterprises to promote authentication across their network. By expanding their presence in the market, operators will reach more businesses and enterprises to increase authentication traffic. In turn, this will increase potential revenue opportunities from traffic whilst making operator solutions more accessible and scalable. CPaaS therefore, offers an omnichannel experience which can provide a more frictionless user process when requiring authentication across a network, thus heightening its attractiveness to customers.



Figure 1: Juniper Research Competitor Leaderboard: Mobile Authentication Vendors



Source: Juniper Research

**TATA COMMUNICATIONS**

**kaleyra**

Juniper Research has scored both Tata Communications and Kaleyra as Established Leaders in the mobile authentication market, with Tata Communications completing the acquisition of Kaleyra in October 2023.

Juniper Research believes Tata Communications to be a market leader in the mobile authentication market, providing its services in over 180 countries, to enterprises across a range of market verticals, including asset tracking, and employee health and safety.

Tata Communications' product and solutions portfolio falls into seven distinct categories: carrier services, cloud connectivity, content delivery network, cybersecurity, enterprise network capabilities, unified communications, and mobility & IoT solutions.

Notably, Tata Communication's extensive network of partnerships throughout the authentication value chain enables the company to provide its clients with cutting-edge authentication software and hardware solutions.

A key strength of Tata Communications' offering is the depth of its product portfolio in the mobile authentication market, including its sophisticated fraud and security protection solutions. For example, its own fraud protection toolkit can effectively identify and block fraudulent activity.

Kaleyra has more than 3,800 customers and business partners worldwide across industry verticals such as financial institutions, eCommerce players, OTTs, software companies, logistic enablers, healthcare providers, retailers, and other large organisations worldwide. This demonstrates the range and breadth of their customer base, as well as the demand for effective authentication solutions.

A key strength of Kaleyra is its market coverage. The company has a smart omnichannel cloud 'all-in-one' communication platform; offering text messaging, instant messaging, voice, numbers, and more. Its mission is to help enterprises communicate with their final users through omnichannel CPaaS.



### 1.1.1 Tata Communications



Table 2: Juniper Research Competitor Leaderboard Heatmap: Mobile Authentication Vendors

|                     | Capability & Capacity                                     |  |  |                      |  | Product & Positioning                 |   |  |  |                           | Market Presence |
|---------------------|---|--|--|----------------------|--|---------------------------------------|---|--|--|---------------------------|-----------------|
|                     | Financial Performance in the Mobile Authentication Sector | Size of Operations in the Mobile Authentication Sector | Extent & Breadth of Mobile Authentication Partnerships | Marketing & Branding | Experience in the Mobile Authentication Market | Mobile Authentication Market Coverage | Mobile Authentication Service & Product Offerings | Mobile Authentication Product Strength | Extent of Innovation in the Mobile Authentication Market | Future Business Prospects |                 |
| Tata Communications |   |  |  |                      |  |                                       |   |  |  |                           |                 |



#### i. Corporate Information

Founded in 1972, Tata Communications is part of the Tata Group, an Indian multinational corporation. For the 2022 financial year, Tata Communications reported consolidated revenue of USD \$2.2 billion.

Tata Communications is a global digital ecosystem enabler powering today’s fast-growing digital economy in more than 190 countries and territories. The company enables digital transformation of enterprises globally with collaboration and connected solutions, core and next-gen connectivity, cloud hosting and security solutions and media services. 300 of the Fortune 500 companies are its customers, and the company connects businesses to 80% of the world’s cloud giants.

It owns and operates a global submarine cable network that provides connectivity to countries on a worldwide scale, with 300 PoPs across the globe. Moreover, Tata Communications is part of several cable consortia, including the ADC (Asia Direct Cable) Consortium, SEACOM, Unity, PIPE Pacific 1 (PPC1), SMW-3, SMW-4, SAFE/SAT3, Japan-US, China-US, and APCN-2, and is investing in new cable systems including I-ME-WE, TGN-Gulf, and WACS.

The executive team at Tata Communications includes Amur Swaminathan Lakshminarayanan (Managing Director & Chief Executive Officer); Aadesh Goyal (Chief Human Resources Officer); Genius Wong (Chief Product and Technology Officer); Madhusudhan Mysore (Chief Executive Officer – Tata Communications Transformation Services); Kabir Ahmed Shakir (Chief Financial Officer); Srinivasan CR (Chief Digital Officer); Sumeet Walia (Chief Sales and Marketing Officer); Tri Pham (Chief Strategy Officer); Troy Reynolds (Chief Legal & Compliance Officer).



In October 2023, Tata Communications completed the acquisition of Kaleyra, a global CPaaS provider, with over 3,500 customers across the Americas, Europe, APAC and the Middle East. Mauro Carobene, who was the previous Chief Business Officer at Kaleyra, has now been appointed as the head of Tata Communications' Customer Interaction Suite line of business.

Table 3: Tata Communications' Select Financial Information (\$m), 2020-2022

|                           | 2020      | 2021      | 2022      |
|---------------------------|-----------|-----------|-----------|
| Gross Revenue             | \$2,255.7 | \$2,336.4 | \$2,206.7 |
| Net Revenue               | \$1,248.5 | \$1,355.2 | \$1,310.4 |
| Conversion Rate (INR/USD) | 0.013216  | 0.013663  | 0.013194  |

Source: Tata Communication

## ii. Geographical Spread

Within North America, Tata Communications has three offices in the US, as well as one office in Montreal, Canada. In Europe, Tata Communications has offices in Germany, Spain, Russia, France Poland and UK. Tata Communications has six offices in India, including the company's Mumbai headquarters.

In Asia Pacific, Tata Communications operates out of Hong Kong, Malaysia, Singapore, Japan and Australia. Tata Communications also has offices in Abu Dhabi and Dubai, UAE.

Tata Communications completed the acquisition of Kaleyra, Inc. (NYSE: KLR) in October 2023, for \$100 million, and assuming Kaleyra's outstanding debt. This acquisition will allow Tata to leverage Kaleyra's expertise in technology, engineering, and research and development, including its CPaaS solutions. Thanks to the acquisition, Tata Communications will also add new points of presence in the US, Latin America, the UK, Italy, the Middle East and APAC region as well.

In July 2023, Tata Communications announced it had entered into a share purchase agreement through its Singapore-based subsidiary Tata Communications

International Pte Limited to acquire the remaining 41.9% equity in Oasis Smart SIM Europe SAS (Oasis), a leading eSIM technology provider.

## iii. Key Clients & Strategic Partnerships

Tata Communications' customer portfolio spans a variety of industries including automotive, construction, consulting, eCommerce, education, energy, banking and finance, government, healthcare, holdings, utilities, IT/ITES, legal, OTTs, manufacturing, media and entertainment, pharmaceutical, real estate, retail, services, sports and telecommunications.

In October 2021, Tata Communications expanded its partnership with Cisco. As a result of this new collaboration, Cisco Meraki has been added to Tata Communications' ecosystem; offering managed Wi-Fi services based on Wi-Fi 6 technology and SD-WAN (Software-defined Wide-area Network) services.

In August 2022, Tata Communications announced a partnership with Genesys, a provider of cloud-based customer experience orchestration. As a result of this collaboration, Tata Communications' InstaCC omnichannel CCaaS will be strengthened with an enhanced CX offering.

Tata Communications has also previously formed strategic partnerships with AWS, Google Cloud, Microsoft, MotoGP and SailGP.

## iv. High-level View of Offerings in the Mobile Authentication Space

Tata Communications' product and solutions portfolio falls into seven distinct categories: carrier services, cloud connectivity, content delivery network, cybersecurity, enterprise network capabilities, unified communications, together with mobility & IoT solutions.

a) *Mobility & IoT solutions specifically include:*

- **Enterprise Mobile Messaging:** Tata Communications' Mobile Messaging Exchange is a wholesale A2P SMS aggregation platform, managing international SMS traffic origination, carriage and termination. With coverage in over 180 countries and territories, and more than 400 direct interconnects, its enterprise mobile



messaging platform plays a key role in providing messaging and authentication services over SMS across the globe.

- **Tata Communications Customer Interaction Suite:** Combining CPaaS and CCaaS capabilities, enabling enterprises to deploy and orchestrate a range of contact centre capabilities and omnichannel customer communication options (mobile messaging, voice, chat apps, email, video) into existing applications. The platform also provides ready-made applications for authentication, caller anonymisation, bulk communications and number verification services.
  - a) **Verify,** an intuitive configuration UI and API for creating alphanumeric, numeric and alphabetical one-time-passwords, sending them across a variety of channels (SMS, email, voice, etc.) with workflow rules, and verifying that the user inputs the right OTP.
  - b) **Video Digital Signature,** a feature allowing EU citizens to legally sign documents, confirm their transactions and finalize contracts right from a video call, without meeting in person.

Its customer interaction suite enables brands to hyper-personalize customer interactions throughout the entire lifecycle journey. Along with CPaaS and CCaaS capabilities, it also includes a no-code platform for easy creation of complex customer journeys and Conversational chatbot leveraging AI to power contextual, human-like conversations.

#### *b) Fraud & Security Protection*

- **Fraud Protection Toolkit:** Tata Communications has a technology toolkit to combat and in most case block fraudulent activity. The toolkit includes Big Data analytics, machine learning, crowd sourcing, real-time monitoring, subscriber alerts and automated reporting. The toolkit powers customisable solutions for any size subscriber base prevent proactively fraudulent activities. When the fraud-fighting toolkit identifies a fraudulent call, Tata Communications blocks the number across its entire global network preventing further fraudulent activity.
- **FPaaS (Fraud Prevention-as-a-Service):** Tata Communications deploys dedicated fraud prevention capabilities to detect, protect and mitigate against all kinds of international telecom fraud. Including: subscriber traffic management system,

dialer detector, intelligent fraud management, cyberthreat intelligence, unique VAS fraud prevention, enhanced fraud prevention using AI/ML, fraud prevention API, fraud prevention portal.

- **Fraud Prevention APIs:** Boost business by enhancing visibility and control to minimize fraud.
- **Fraud Prevention Portal:** Self-service and easy to use interface to manage and control voice traffic at convenience.
- **iFMS (Intelligent Fraud Management System):** Monitors the traffic and detects suspicious activity.
- **STMS (Subscriber Traffic Management System):** Monitors the usage in near real-time and triggers alert/block.
- **Dialer Detector:** Identifies machine generated calling.
- **Fraud Analytics:** Additional intelligence to take informed decisions.
- **Signalling Security:** In addition to its wholesale and roaming fraud prevention services, Tata Communications also provides mobile signalling security, addressing security threats in SS7, and in LTE/EPC and 5G Diameter based networks. Signalling security is provided as an integral part of the broader signalling portfolio.



### 1.1.2 Kaleyra



Table 4: Juniper Research Competitor Leaderboard Heatmap: Mobile Authentication Vendors

|         | Capability & Capacity                                     |  |  |                      |  | Product & Positioning                 |   |  |  |                           |                 |
|---------|---|--|--|----------------------|--|---------------------------------------|---|--|--|---------------------------|-----------------|
|         | Financial Performance in the Mobile Authentication Sector | Size of Operations in the Mobile Authentication Sector | Extent & Breadth of Mobile Authentication Partnerships | Marketing & Branding | Experience in the Mobile Authentication Market | Mobile Authentication Market Coverage | Mobile Authentication Service & Product Offerings | Mobile Authentication Product Strength | Extent of Innovation in the Mobile Authentication Market | Future Business Prospects | Market Presence |
| Kaleyra | High  | Medium   | Medium   | Medium               | High   | Medium                                | Medium  | High                                   | Medium   | Medium                    | High            |

Source: Juniper Research

#### i. Corporate Information

Founded in 1999 by Dario Calogero, the company was originally known as Ubiquity. In 2018, the business was rebranded as Kaleyra after the acquisition of Solutions Infini in 2017. Kaleyra is a global CPaaS provider, offering mobile communications services to financial institutions, eCommerce players, OTTs, software companies, logistic enablers, healthcare providers, retailers, and other large organizations worldwide. In October 2023, Tata Communications completed the acquisition of Kaleyra for approximately \$100 million and assuming its outstanding debt, in order to strengthen their CPaaS capabilities and offer more personalized experiences to end customers.

Kaleyra’s former Executive Vice President and Chief Business Officer, Mauro Carobene, has now been appointed as the head of Tata Communications’ Customer Interaction Suite line of business.

Through its proprietary cloud communications platform, Kaleyra manages multi-channel integrated communications services on a global scale, consisting of inbound/outbound messaging solutions, programmable voice and IVR (Interactive Voice Response) configurations, hosted telephone numbers, conversational marketing solutions, RCS (Rich Communication Services), and other types of IP communication services such as email, push notifications, video/audio/chat, and WhatsApp. Kaleyra’s annual revenue in 2022 surmounted \$339.2 million.





## Geographic Spread

With more than 600 employees and 14 global offices, Kaleyra organizes its leading efforts in three principal locations: Europe, the US, and APACME.

## ii. Key Clients & Strategic Partnerships

Businesses using Kaleyra's solutions include Air Asia, Amazon Pay, Banca Sella, Banca Widiba, Bosch, Flipkart, Intesa Sanpaolo, Moneyfarm, Nexi, Oxfam, Rakuten Viber, Santagostino TATA 1mg, Zomato.

In March 2019, Kaleyra became an official WhatsApp Business Solution Provider and in 2023, it got awarded as Partner of the Year by Meta for Cloud API. As a result, Kaleyra can offer its enterprise customers access to WhatsApp Business communications through an integrated API. Juniper Research suggests that Kaleyra is likely to attract businesses that are keen to adopt an omnichannel presence.

Kaleyra has also a strategic partnership with Google, related to promoting the adoption of Google's products including RBM

Kaleyra also has strategic partnerships with Oracle (integrations with Eloqua and Responsys), Amazon Web Services, Meta, Visa, Selligent, Zoho and others. Juniper Research also notes that Kaleyra's products are compatible with Leadsquared, Oracle, OpenCart, Shopify, WebEngage, WordPress, and Clevertap. Kaleyra's compatibility with eCommerce platforms and CRMs will appeal to eCommerce businesses and large enterprises wanting to integrate messaging in their customer service offering.

Kaleyra announced a partnership with Bosch Group in February 2022 in order to power the Bosch Mobility Solutions cloud communications in India.

## iii. High-level View of Offerings

Kaleyra offers a smart omnichannel cloud 'all-in-one' communication platform; offering text messaging, instant messaging, voice, numbers, and more. Its mission is to help enterprises communicate with their final users through its robust APIs and global cloud platform.

Kaleyra offers a multitude of tools and features, including:

- **Messaging APIs** – suitable for transactional messaging, OTPs creation and verification and marketing messaging, Kaleyra's APIs guarantee the highest security, availability and reliability standards.
- **WhatsApp for Business API** – this solution allows clients to send WhatsApp instant messages worldwide by engaging in one-on-one conversations with a potential audience of over 1.5 billion people.
- **Video** – this webRTC solution improves the overall customer experience of brands, by offering live video chat to communicate with their customer over video call. The interface can be customized with the brand's logo and colours.
- **RCS** – Kaleyra allows brands to communicate with their customers through RCS, which is a secure messaging channel to customers.
- **Voice** – this communication channel lets businesses give a human touch to marketing campaigns by connecting customers to real people and connecting agents to end users without revealing their actual numbers. Businesses can also create seamless IVR flows for customer journeys initiated by incoming calls.
- **Chatbots** – this solution allows conversations initiated by users to be managed automatically. The chatbot uses Kaleyra's proprietary NLP (natural language processing) algorithms to determine conversation intent and to map the user's input phrases.
- **Numbers** – Virtual numbers allow businesses to obtain a short- or long-code number to connect with customers through SMS, WhatsApp and Voice. Kaleyra enables companies to use national numbers, which allow them to operate globally, whilst maintaining a local feel, thereby increasing consumer trust, and toll-free numbers.
- **Reports Analytics Layer** – enables businesses to create insightful reports, such as cost reports or marketing campaign summaries.

Kaleyra also offers specific APIs for several channels and services like SMS, email, voice, push notifications, WhatsApp, OTP, Video, RCS messaging API, and two-way SMS. As a telco operator itself in Italy, its services go through secure connections directly with MNOs or other international partners. For large companies in need of



high-security levels, Kaleyra guarantees secure connections to external entities, and a centralized authentication system. Integration with existing systems comes at a low cost because Kaleyra's systems are easy to integrate, thanks to the plugins and the professional services offered by the company.

Kaleyra's platform makes it possible to engage customers in two-way conversations; and can process five thousand messages per second, with the capability to increase the throughput with additional server power and speed. The platform supports 87 languages and is capable of stitching together concatenated messages of up to 4,000 characters.

Kaleyra allows organisations to deliver transactional messages in a timely fashion so that, for example, users receive their mobile PIN and OTP in the shortest time possible and can continue their online banking operations. The system includes a feature to prevent account frauds, reduce phishing and hacking attempts through 2FA. It also supports automated, encrypted OTP generation and verification to enable 2FA on different platforms with its 'Verify' service.

Kaleyra's Voice APIs include software and infrastructure that process and manage voice calls, including IVR and routing capabilities. Kaleyra platform offers functionalities such as call masking and click-to-call features. The former safeguards privacy by connecting agents directly without exposing their actual phone numbers, while the latter allows customers to engage instantly through a button or icon. Customers can connect with businesses through a help desk, a CRM, or a website; empowering seamless communication and productivity. Meanwhile, Kaleyra's outbound dialling automates personalized key messages. The user-friendly platform helps clients get started quickly.



## 1.2 Juniper Research Leaderboard Assessment Methodology

Juniper Research provides updates on a selected number of mobile authentication service providers. To qualify for the Leaderboard, companies must be involved in the direct provision of mobile authentication services. The companies included here have developed specific expertise in mobile authentication, though some embarked on the route earlier than others and therefore have wider customer bases or geographical reach. It includes established specialists, such as Tata Communications and Kaleyra, through to companies where authentication services are part of a wider communications suite, such as Comviva and Telesign.

This research covers a significant number of vendors; however, we cannot guarantee that all players in the market are included. Our approach is to use a standard template to summarise the capability of players offering mobile authentication services. This template concludes with our view of the key strengths and strategic development opportunities for each vendor.

We also provide our view of vendor positioning using our Juniper Research Leaderboard technique. This technique, which applies quantitative scoring to qualitative information, enables us to assess each player's capability and capacity, as well as its product and position in the broader market for authentication services. The resulting Leaderboard exhibits our view of relative vendor positioning.

### 1.2.1 Limitations & Interpretations

Our assessment is based on a combination of quantitative measures, where they are available (such as revenue and numbers of employees) that indicate relative strength, and also of qualitative judgement, based on available market and vendor information as published. In addition, we have added our in-house knowledge from meetings and interviews with a range of industry players. We have also used publicly available information to arrive at a broad, indicative positioning of vendors in this market, on a 'best efforts' basis.

However, we would also caution that our analysis is almost by nature based on incomplete information and therefore with some elements of this analysis we have

had to be more judgemental than others. For example, with some vendors, less detailed financial information is typically available if they are not publicly listed companies. This is particularly the case when assessing early stage companies, where a degree of secrecy may be advantageous to avoid other companies replicating elements of the business model or strategy.

We also remind readers that the list of vendors considered is not exhaustive across the entire market but rather selective. Juniper Research endeavours to provide accurate information. While information or comment is believed to be correct at the time of publication, Juniper Research cannot accept any responsibility for its completeness or accuracy, the analysis is presented on a 'best efforts' basis.

The Leaderboard compares the positioning of platform providers based on Juniper Research's scoring of each company against the above criteria that Juniper has defined. The Leaderboard is designed to compare how the vendors position themselves in the market based on these criteria. Relative placement in one particular unit of the Leaderboard does not imply that any one vendor is necessarily better placed than others. For example, one vendor's objectives will be different from the next and the vendor may be very successfully fulfilling them without being placed in the top right box of the Leaderboard, which is the traditional location for the leading players.

Therefore, for avoidance of doubt in interpreting the Leaderboard, we are not suggesting that any single cell in the Leaderboard implies in any way that a group of vendors is more advantageously positioned than another group, just differently positioned. We additionally would draw the reader's attention to the fact that vendors are listed alphabetically in a unit of the Leaderboard and not ranked in any way in the cell of the Leaderboard.

The Leaderboard is also valid at a specific point in time, October 2023. It does not indicate how we expect positioning to change in future, or indeed in which direction we believe that the vendors are moving. We caution against companies taking any decisions based on this analysis; it is merely intended as an analytical summary by Juniper Research as an independent third party



Table 5: Juniper Research Competitor Leaderboard Scoring Criteria for Mobile Authentication Vendors

| Category              | Scoring Criteria                                       | Relevant Information   |
|-----------------------|--|--|
| Capacity & Capability | Size of Operations in the Mobile Authentication Sector | Juniper Research considers the extent of geographical reach that network vendors are testing in the mobile authentication space and their potential for future launches, including number of locations in which vendors have a physical presence   |
|                       | Financial Performance in the Sector                    | For this factor, Juniper Research evaluated the size of the vendor based mobile authentication sector revenues on a global scale. Customers, acquisitions and announced partnerships are considered here. We have also factored in authentication R&D investments, such as financial commitments or dedicated authentication research centres. |
|                       | Extent & Breadth of Mobile Authentication Partnerships | This criterion considered total number of mobile authentication partnerships leveraged by the vendor.  |
|                       | Corporate Branding & Marketing Strength                | The strength of the vendor's brand and marketing capability as perceived by a review of the company's website; aspects such as use of case studies, communications and 'joined-up' marketing of total services/products were considered.   |
|                       | Experience in the Mobile Authentication Space          | Information pertaining to when vendors first entered the mobile authentication market, when they offered commercially available services to clients, as well as the founding year of the company.  |
| Product & Positioning | Mobile Authentication Market Coverage                  | This factor considers the total number of operator network connections as well as the total number of subscribers supported by the vendor.   |
|                       | Service and Product Offerings                          | This criterion includes the offering of authentication fraud features including security services, 2FA/MFA, OTPs, Voice authentication, firewall deployment and management.  |
|                       | Mobile Authentication Product Strength                 | This criterion assesses the total number of vendor solutions supporting mobile authentication solutions and the extent of market compliance with relevant regulations and standards  |
|                       | Creativity & Innovation                                | This criterion is a score of Juniper Research's opinion of the company's innovation, or plans for innovation, by taking into consideration recent partnerships with vendors offering mobile authentication solutions as well as any anticipated product launches.  |
|                       | Future Business Prospects                              | This criterion is a score of Juniper Research's opinion of the company's future prospects in the market, using information supplied by the vendor in briefings and readily available information to anticipate the extent of its related product offerings and solutions.  |
| Market Presence       | Market Presence  | Here, Juniper Research have used the total number of employees employed by the company to establish its market presence, with more employees meaning greater market presence.  |

Source: Juniper Research



## About Tata Communications



Tata Communications is a leading digital ecosystem provider that powers today's fast-growing digital economy. The Company enables the digital transformation of enterprises globally, including 300 of the Fortune 500 – unlocking opportunities for businesses by enabling borderless growth, boosting product innovation and customer experience, improving productivity and efficiency, building agility and managing risk.

With its solutions orientated approach, proven managed service capabilities and cutting-edge infrastructure, Tata Communications drives the next level of intelligence powered by cloud, mobility, Internet of Things (IoT), collaboration, security and network services.

Tata Communications has been a part of the rich heritage of the internet in India. Over the last 25 years, enterprise-enabled services have been essential to the adoption of digital services in the country. From utility to transformation, connectivity is an essential fabric of sustenance for the economy.

## About Kaleyra



Kaleyra, Inc. is a global provider of mobile communication services to financial institutions, e-commerce players, OTTs, software companies, logistic enablers, healthcare providers, retailers, and other large organizations worldwide. Through its proprietary platform and robust APIs, Kaleyra manages multi-channel integrated communication services, consisting of messaging, rich messaging and instant messaging, video, push notifications, e-mail, voice services, and chatbots.

Kaleyra's technology makes it possible to safely and securely manage billions of messages monthly with over 1,600 operator connections in 190+ countries, including all tier-1 US carrier.

## About Juniper Research



Juniper Research was founded in 2001 by the industry consultant Tony Crabtree, in the midst of the telecoms and dot-com crash. The business was fully incorporated in February 2002 and has since grown to become one of the leading analyst firms in the mobile and digital tech sector.

Juniper Research specialises in identifying and appraising new high-growth market sectors within the digital ecosystem. Market sizing and forecasting are the cornerstones of our offering, together with competitive analysis, strategic assessment and business modelling.

We endeavour to provide independent and impartial analysis of both current and emerging opportunities via a team of dedicated specialists - all knowledgeable, experienced and experts in their field.

Our clients range from mobile operators through to content providers, vendors and financial institutions. Juniper Research's client base spans the globe, with the majority of our clients based in North America, Western Europe and the Far East.