FROST & SULLIVAN

2024 TECHNOLOGY INNOVATION LEADER

IN THE ASIA-PACIFIC TELECOM OSS/BSS INDUSTRY

Whale Cloud

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2024 BEST PRACTICES AWARD

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. Whale Cloud excels in many of the criteria in the telecom operation support system (OSS)/business support system (BSS) space.



Commitment to Innovation

Formerly known as ZTEsoft, Whale Cloud is making great strides in helping communication service providers (CSPs) in Asia-Pacific grow. Whale Cloud leverages emerging technologies to address the critical unmet needs of CSPs. For example, it launched the Digital Marketing Cloud (DMC) solution to address unclear goals and low efficiency in CSP consumer and enterprise marketing. The solution utilizes big data and artificial intelligence (AI) technology to provide precise marketing strategies and efficient execution methods. Through omnichannel marketing reach and real-time performance analysis, the solution achieves closed-loop management of marketing activities. DMC integrates key technologies such as gamification, loyalty programs, and Nudge to help CSPs increase revenue, reduce churn, and enhance engagement, filling the gaps in the efficiency and accuracy of traditional marketing tools.

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>
> ***Mei Lee Quah***
> ***Director, ICT Research***

As the accuracy and efficiency of customer identity verification directly impact the security and customer experience in industries such as financial services, telecoms, and retail, Whale Cloud's e-KYC solution utilizes AI tools such as facial recognition, liveness detection, and document recognition to quickly and

accurately complete customer identity verification and risk assessment. The solution dramatically improves verification efficiency, reduces the risks and costs of manual operations, and provides a secure and convenient solution for customer identity verification. With the continuous growth of enterprise data, especially with 5G capability in place, integrating and analyzing this data has become a challenge. Whale Cloud's Customer Data Platform, with its OneID solution, helps companies build comprehensive customer views, update customer data in real time, and provide customer segmentation. This not only enhances customer insights and analysis capabilities but also helps CSPs to understand customer needs and behaviors, enabling them to develop more precise marketing strategies and service offerings.

Whale Cloud's LocalGPT, trained and fine-tuned with industry data, provides tailored large language models (LLMs) for enterprises, empowering OSS/BSS automation, customer experience optimization, data analysis, and intelligent marketing. In particular, by deploying private large models, data security and processing speed are ensured, providing enterprises with efficient and secure generative AI (GenAI) solutions, thus filling the gaps in traditional OSS/BSS systems. In video surveillance, traditional solutions often only provide basic video recording and playback functions and are unable to perform intelligent analysis and alerts. Whale Cloud's Video Intelligence as a Service (VIaaS) solution, leveraging the wide bandwidth of 5G, utilizes AI and computer vision technology to intelligently analyze and process video data, providing support for 100+ algorithms. It can identify abnormal events and behaviors and provide real-time warnings and alerts. This gives enterprises a more intelligent and efficient video surveillance solution that suits various scenarios, such as smart parks, smart construction sites, and smart gas stations.

ZSmart Digital OSS integrates advanced AI, machine learning (ML), and cloud computing technologies. Powered by GenAI, it aims to optimize and automate network operations and maintenance for CSPs and other industries. The solution fills the gaps in real-time monitoring of network performance and faults, fault prediction and automatic RCA analysis, AI image quality inspection, KPI trend prediction, and fault localization, improving operational efficiency and service quality. Whale Cloud's Fiber roll-out as a Service (FaaS) is based on the geographic information system (GIS) platform that supports the entire lifecycle of fiber to the home (FTTH) networks, including planning and design, construction and installation, completion and acceptance. FaaS utilizes data-driven algorithms to support automatic planning, high-level design (HLD) and low-level design (LLD), significantly enhancing the efficiency of fiber network design and fiber rollout quality. It brings CSPs a competitive advantage and can support HLD design for 10,000 Home Passes per day.

> *"The positive feedback from Whale Cloud's enterprise customers is not only reinforcing its selection as a vendor of choice for the selected purpose but also building credibility for scope expansion and long-term partnerships."*
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The Whale Cloud management nurtures and sustains a culture of innovation by setting a company-level strategy that is clear for the long term and emphasizes technological innovation in the company's development. Whale Cloud continuously increases investment in research and development (R&D) of emerging technologies such as cloud computing, big data, and AI. The company harnesses a diverse talent workforce and enhances employee skills through internal training and external collaborations. It implements innovation incentive mechanisms such as patent rewards and commendations for

outstanding projects to stimulate employees' innovation enthusiasm and participation. Whale Cloud encourages cross-departmental collaboration, breaks down information barriers, and promotes knowledge sharing. It frequently organizes technical seminars, innovation competitions, hackathons, and other activities to provide employees with platforms to showcase their creativity and solutions. The company closely monitors industry demand changes and rapidly transforms customer feedback into innovative functionality for products and services. It has established a flexible product iteration mechanism to ensure solutions quickly adapt to new market needs. Leveraging its expertise in the digital field, Whale Cloud promotes the digital transformation of internal management systems, improving work efficiency, reducing unnecessary process burdens, and allowing employees to focus more on innovation work.

Commitment to Creativity

Whale Cloud capitalizes on technology advancements to tailor products to meet customer needs. The company provides lightweight SaaS-based products for CSPs seeking to achieve a quick return on investment (ROI). For CSPs with full stack IT transformation needs, the company offers end-to-end digital transformation products and services. Whale Cloud addresses customer demands, including the need for agility, efficient solutions, and personalized experience with its range of creative solutions.

Whale Cloud designed its telco as a service (TaaS) approach to meet the needs of both greenfield CSPs focusing on outcome or minimum viable path, and mature CSPs longing for immediate results. Introduced to radically address fast-evolving business needs, TaaS follows the guiding principle of 80:20, which refers to the out-of-the-box to customized ratio, i.e., TaaS is a solution requiring limited customization. Traditional BSS solutions are made-to-order and highly customized, but they struggle with slow time-to-market and high TCO. Highly customized platforms heavily rely on third parties to help develop products, which hampers speed to market. BSS implementations typically take months and years. In stark contrast, Whale Cloud TaaS helped an Asian CSP commercially implement a greenfield BSS transformation using agile methodologies, making it one of the fastest CSPs to go to market.

Whale Cloud’s FaaS platform brings innovation and important features to FTTH network construction. It utilizes GIS technology for precise network planning, providing high-precision maps and geographical information. It enables automatic planning and design for FTTH networks with data-driven path optimization algorithms to reduce upfront investment costs. Additionally, the platform supports mobile terminals and facilitates on-site surveys, real-time data uploading, and remote collaboration functions, improving work efficiency. It also integrates engineering management tools that cover the entire process from design to construction, accelerating network deployment and shortening time to market. These innovative features have been conceptualized based on in-depth market demand analysis and optimized to improve their effectiveness so that the solution can enhance the efficiency and quality of FTTH networks.

Whale Cloud’s Digital Experience Platform (DXP) utilizes multi-channel integration to achieve cross-platform content management and user interaction. Integration of customer data analytics platforms with AI technology facilitates real-time data analysis and insights to help businesses understand user behavior and optimize operational work and strategy development. A personalized experience is achieved through

real-time data analysis, user behavior tracking, and automated marketing tools. DXP delivers the most suitable personalized content and recommendations to customers at the right time and through the right channel, enhancing user satisfaction and engagement. The platform can also easily integrate with third-party systems and services through APIs and SDKs, empowering third-party systems quickly.

Commercialization Success

Whale Cloud solutions are easy to use, efficient, always on, and built on open platforms. The Whale Cloud ZSmart BSS is built on an open platform that embraces a low-code, no-code, and pro-code approach. With this open platform, CSPs can easily customize BSS capabilities to suit specific business requirements based on strategies without the need to raise Change Requests to the vendor. Together with Open APIs and DevStudio, Whale Cloud's shared development platform, the open platform combines the simplicity of the "Best of Suite" with the specialization of "Best of Breed." Customers across various regions fully appreciate the support the company renders, particularly its expertise, commitment, dedication, and attention to detail, which have led to successful outcomes.

The Whale Cloud ZSmart OCS can be deployed in Active-Active architecture mode, which guarantees high availability, doubles resource utilization rates, and provides load balancing capabilities for better performance and fault tolerance (i.e., to avoid service disruption). Real-time billing capability enables features such as real-time ledger collection, bill discount calculation, and tax calculation, which can improve billing performance by 20 times while supplying customers with real-time usage detail information. Cloud-based IT architecture reduces complexity, enables the flexibility needed for innovation, and reduces time to market.

Whale Cloud’s exceptional collaborative skills and teamwork are other reasons contributing to making a difference in the relationship. The positive feedback from Whale Cloud’s enterprise customers, including DITO Telecommunity, Telekom Malaysia, China Telecom, and China Mobile for implementations related to core products, TaaS, and AI platforms, is not only reinforcing its selection as a vendor of choice for the selected purpose but also building credibility for scope expansion and long-term partnerships.

Application Diversity

Whale Cloud is at the forefront of integrating and developing technologies that cater to a wide range of applications and environments. Its technology is adopted across product lines and applications, especially among the fastest-growing applications.

Whale Cloud's AIGCortex is a GenAI platform designed to generate new and personalized content for telco scenarios such as customer care, sales, marketing, and network operations. Also known as the GenAI Telco Platform, AIGCortex comes pre-integrated with the Whale Cloud Digital OSS/BSS suite and third-party LLM solutions for on-premises LLM deployment. AIGCortex is equipped with robust governance mechanisms to ensure compliance with privacy regulations. It employs advanced encryption techniques, security rules, masking rules, guardrails, and data anonymization to safeguard customer data and maintain confidentiality. The company prioritizes trust, reliability, and customer data protection. By harnessing up-

to-date OSS/BSS telco data and telco domain knowledge, CSPs can develop valuable and meaningful use cases across business domains.

Whale Cloud provides several out-of-the-box AI capabilities, including image search and face recognition, OCR, machine translation, intelligent speech interaction, speech recognition, speech synthesis, and natural language understanding. It is used in various scenarios, including intelligent Q&A, intelligent quality inspection, real-time subtitling for speeches, and transcription of audio recordings.

Customer Acquisition and Growth Potential

Whale Cloud's customer-facing strategies provide exceptional business value and boost customer acquisition rates by offering customized digital transformation solutions to CSPs. Amid the mergers and acquisitions in Asia-Pacific (e.g., True and DTAC), CSPs are looking to merge legacy multi-vendor solutions into a single, pre-integrated solution to optimize capital expenditure (CAPEX) and OPEX and foster growth. Whale Cloud supports this industry trend by providing simple pre-integrated solutions and optimizing resource utilization, which is crucial to ensure growth.

Whale Cloud's product and services strategy includes a Lightweight SaaS-based approach that utilizes ready-to-use products and services with flexible commercial models for swift deployment. The approach has been successfully implemented for MyRepublic in Singapore, where Whale Cloud facilitated the deployment of a public cloud Online Charging System and Policy and Charging Rules Function (PCRF) to enhance MyRepublic's digital capabilities. Similarly, in Malaysia, a leading CSP utilized Whale Cloud's Field Service Engineer (FSE) software solution for workforce management on the public cloud, which improved the Mean Time to Repair (MTTR) and increased workforce efficiency.

Whale Cloud's TaaS solution is designed for Greenfield CSPs and IT transformation projects. It provides a comprehensive, digital-first stack that accelerates market entry for new initiatives. Whale Cloud assisted Telekom Malaysia in deploying TaaS, which streamlined operations and enabled the capability to dynamically create and offer applications using open network capabilities and data, giving the company the necessary agility to react quickly to market changes and meet customer needs. The TaaS solution aids CSPs in the transition from Telco to Techco to truly leverage advanced 5G capabilities (e.g., network slicing) and benefit from 5G monetization.

Whale Cloud has over 50 branches globally, including Southeast Asia and South Asia, which can ensure reliable, fast delivery of digital transformation projects for customers. The company has rebuilt the Digital Transformation Delivery Framework (DTDF). Built around scaled agility and lean concepts, the framework integrates onshore, nearshore, and offshore services and puts the appropriate project organization structure in place. With an accountable delivery approach, the company makes continuous delivery ubiquitous, which can unlock business value for customers.

To increase customer acquisition and drive customer value, the company utilizes multiple channels to maintain relationships. It hosts online events that help nurture customer relationships and offline events that enable face-to-face interactions and community building. Examples of online events include the Whale Cloud Inspire Webinar series, virtual workshops for customers to learn about and try products and

services, and exclusive web-based training and virtual conferences. Examples of offline events include trade shows, networking sessions, the Whale Cloud Together Summit annual user forum, and customer appreciation events.

Technological advancements have enabled Whale Cloud to provide customers with seamless, personalized experiences. From user-friendly interfaces to efficient customer support systems, technology has enhanced overall customer experiences. They deploy several customer-facing processes to support efficient and consistent customer acquisition while improving the retention of existing ones. These include:

1. Lead Generation: Dedicated marketing teams to implement effective lead generation strategies to identify and attract potential customers through online advertising, content marketing, referrals, and targeted campaigns

2. Streamlining the Sales Process: A unified sales process ensures a seamless experience for new customers and encompasses prompt follow-ups and personalized communications

3. Customer Support: Multi-channel customer support through phone, email, and social media to address and resolve customer inquiries, issues, and complaints promptly

4. Personalization and Engagement: Personalized marketing strategies to cater to specific customer needs and preferences

5. Feedback and Continuous Improvement: Processes to actively seek and incorporate customer feedback into improvement plans for products, services, and overall customer experience—use of surveys, reviews, and feedback mechanisms identify areas for enhancement and demonstrate a commitment to customer satisfaction

6. Relationship Management: Dedicated account managers or customer success teams to build and maintain strong relationships with key clients; relationship management initiatives include regular communication, check-ins, and proactive problem-solving

Whale Cloud makes products and services more accessible and convenient for customers, strengthening customer engagement and loyalty. The percentage of leads or prospects converting into paying customers is positive and on the uptrend. The average customer acquisition cost is also comparatively lower compared to competitors due to Whale Cloud's higher retention rate and the overall business value it brings to customers.

In 2023, Whale Cloud OSS/BSS accounted for nearly 60% of its revenue, growing at 8% year-over-year, above the industry average. The robust growth signals further opportunities for the company to tap into the industry transition to 5G, where OSS capabilities will become more critical to power 5G orchestration, fulfillment, and assurance needs.

Conclusion

Whale Cloud is forward-thinking and reliable. The company provides customers with unique business value, improved customer experience, and problem-solving capabilities while meeting customer's needs. With extensive experience, the company has been instrumental in assisting CSPs to consolidate and simplify IT architectures, establishing unified platforms for OSS/BSS, optimizing CAPEX and OPEX, and achieving business convergence in FMC offerings.

With its strong overall performance, Whale Cloud earns Frost & Sullivan's 2024 Asia-Pacific Technology Innovation Leadership Award in the Telecom OSS/BSS industry.

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What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

Best Practices Award Analysis

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization Success: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

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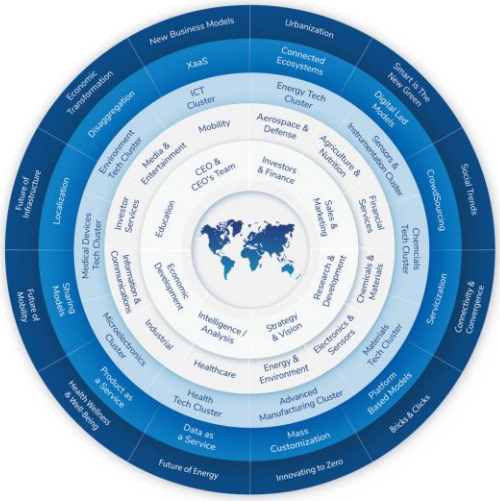


Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.



Analytical Perspectives:

- Mega Trend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)