



Whale Cloud

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**TECHNOLOGY
INNOVATION
LEADER**

*Enhancing Customer Impact Through
Powerful Technology Integration*

*RECOGNIZED FOR BEST PRACTICES IN THE
ASIA-PACIFIC AI-ENABLED OSS/BSS INDUSTRY*

F R O S T & S U L L I V A N

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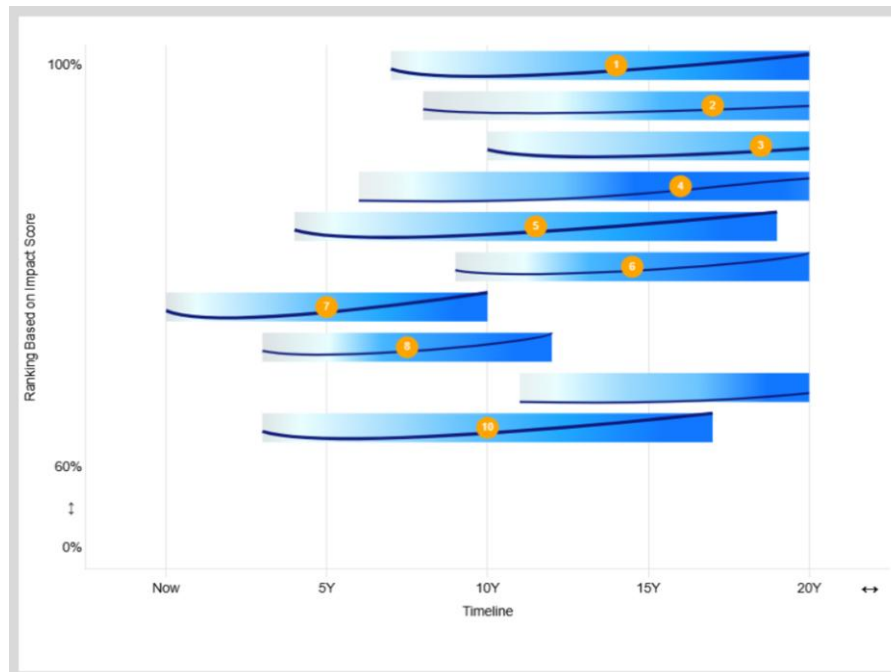
Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition 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 AI-enabled OSS/BSS space.

RECOGNITION CRITERIA	
<i>Business Impact</i>	<i>Technology Leverage</i>
Financial Performance	Commitment to Innovation
Customer Acquisition	Commitment to Creativity
Operational Efficiency	Stage Gate Efficiency
Growth Potential	Commercialization
Human Capital	Application Diversity

Top Transformations Impacting Growth in the APAC AI-enabled OSS/BSS Industry

Rank	Strategic Imperative	Timeline	Impact (%)	Impact Curve
1	Geopolitical Chaos Impact of trade tariffs on EV charging component costs	2031 - 45	87	Exponential
2	Transformative Mega Trends Rise of autonomous electric fleets in urban areas	2032 - 50	84	Polynomial
3	Industry Convergence Telecommunications and automotive sectors partnering for connected EV ecosystems	2034 - 51	77	Exponential
4	Transformative Mega Trends Government mandates for green public transportation systems	2030 - 50	76	Logistic
5	Competitive Intensity Entry of tech giants into the EV charging market	2028 - 43	72	Exponential
6	Geopolitical Chaos Political instability affecting infrastructure investments in certain regions	2033 - 44	68	Polynomial
7	Disruptive Technologies Development of ultra-fast charging technology reducing charge times to minutes	2024 - 34	67	Exponential
8	Internal Challenges Legacy IT systems hindering integration with modern e-mobility solutions	2027 - 36	64	Polynomial
9	Industry Convergence Integration of EV charging with renewable energy projects	2035 - 54	62	Logistic
10	Compression of Value Chains Direct manufacturer to consumer sales bypassing traditional dealerships	2027 - 41	61	Exponential



Commitment to Innovation and Creativity

Founded in 2003 and formerly known as ZTEsoft, Whale Cloud has been closely integrated with the Alibaba Cloud ecosystem since 2018. The company is in business to provide operations support system (OSS) and business support systems (BSS), cloud, big data, and AI-integrated solutions to customers, including communication service providers (CSPs), government agencies, smart city operators, and

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Senior Director, ICT Research

enterprises in over 80 countries worldwide. It is committed to innovating and proactively staying ahead of market trends to effectively address the constantly evolving needs of customers. Whale Cloud’s Nanjing headquarters in China drives continuous ideation and solution development. The company has 19 capability centers, with two centers dedicated to R&D in artificial intelligence (AI). Notable is the company’s implementation of incentive mechanisms such as patent rewards that help stimulate innovation, enthusiasm, and participation

among employees. To ensure alignment, the company conducts annual strategic planning and invests heavily in product and customer-centric innovation including integrating AI as value-driven and platform-level solutions into its portfolio. With AI increasingly driving solutions for customers, the company has proactively pre-empted some key challenges, e.g., readiness of relevant data for use with AI models and relevance of AI models for local context, to ensure customers seamlessly benefit from use of AI.

The WhaleDI AI platform is the latest example of customer-centric innovation from Whale Cloud that enhances automation, personalization, and operational intelligence. The platform is positioned as the

core technology innovation driver designed to meet customer needs by addressing key pain points, such as fragmented data, slow service rollout, and limited personalization, by enabling AI-driven decision-making across customer journey touchpoints and network operations. The platform supports multimodal AI for richer, more intuitive interactions and uses predictive, generative, and preceptive AI to tailor services, automate responses, and anticipate customer needs. It also enables real-time campaign optimization and intelligent customer engagement. Guided by the SMART framework, which has been designed to create a sustainable enterprise-level neural network, the WhaleDI AI platform can leverage superior intelligence to ensure that AI is adaptable to diverse environments. Its full-stack AI suite, which is available as a standalone solution for customers looking to build a strong AI foundation, caters to mobile services, fintech, and public sector industries. Within the mobile services industry, it helps CSPs integrate AI into OSS/BSS for predictive operations and automation to achieve improved operational efficiency, reduced manual intervention, and accelerated AI scalability.

WhaleDI AI is strategically embedded in an end-to-end manner across Whale Cloud's core platforms, including its flagship ZSmart suite, cloud solutions, and smart city offerings, that support digital transformation and customer experience initiatives. The ZSmart suite encompasses components such as Digital OSS, Digital BSS, Digital Experience Platform, and Digital CRM. AI within its ZSmart suite enables real-time customer experience management with customer behavior analytics, automated service provisioning with AI-driven service orchestration, and predictive maintenance with automated fault detection and resolution. The end-to-end integration of WhaleDI AI across platforms enables customers to leverage AI as embedded AI capabilities across all layers. Value-added capabilities that have been made available include AI-driven decision-making, AI-powered customer care (e.g., with intelligent chatbots via LocalGPT), AI-driven marketing automation (e.g., with Digital Marketing Cloud [DMC]), AI-enabled OSS/BSS automation (e.g., within ZSmart). In addition to optimizing OSS/BSS through AI, Whale Cloud is bringing comprehensive solutions for CSPs, helping to shorten time to market and achieving improved ROI. Without a holistic approach, AI capability development will be uneven and the lack of collaborative efforts across departments can potentially delay service rollout.

Commercialization

Whale Cloud's commercialized solutions, including the ZSmart Digital BSS and WhaleDI AI, are stable, reliable, and can integrate well with internal and third-party systems. Its enterprise domain context (EDC), which helps enterprises build AI-ready data and standard-compliant open-platform concepts, contributes to the ease of integration experienced by customers. Worthy of praise is how the company reduces the cost of localizing AI models and overcomes scenarios where AI models fail to adapt to local data contexts by defining the necessary data sets, document topics, API metadata, and data access protocols for different domains to ensure data integration, standardization, and enhancement. Flexible and modular architecture supports the modular deployment of OSS/BSS and AI components, enabling fast time-to-market for new services with minimal disruption. The company offers cost-effective, localized, and scalable core platforms tailored to the needs of its target segments, Tier-1 and Tier-2/3 CSPs in emerging markets in Asia-Pacific (APAC), Africa, and Latin America. Its low total cost of ownership (TCO) is a unique selling point that differentiates it from close competitors, particularly now with the value-added capability of AI integrated into solutions addressing CSPs that seek scalable, AI-integrated OSS/BSS platforms with

low TCO. Tiered pricing models, including free and scale tiers for enterprise-grade AI access, make AI accessible to medium-sized CSPs and government agencies. Whale Cloud is able to offer its pricing model because of its low inference costs and high performance.

Customers choose Whale Cloud for its customer-centric focus; product attributes, including but not limited to functionality, ease of use, performance and strong professional services expertise. Satisfied customers highly rate the company's strong regional delivery capabilities. In APAC, Whale Cloud customers are in China (e.g., China Mobile, China Telecom, China Unicom), Pakistan (e.g., China Mobile Pakistan or CMPak), and Southeast Asia, including Indonesia (e.g., Smartfren) and the Philippines (e.g., DITO Telecommunity). Within China, Whale Cloud supports local and nationwide CSPs in partnership with Alibaba Cloud and ZTE, by providing smart city, fiber rollout, and AI-driven OSS/BSS platforms. In India and Southeast Asia, the company has a slightly expanded scope where it actively supports CSPs in digital transformation (e.g., backend modernization that includes OSS/BSS transformation and digital service enablement), customer experience (e.g., customer experience transformation, AI-driven marketing automation, and network planning automation), and smart city initiatives (e.g., digital government initiatives, including AI-powered citizen services and IoT orchestration).

Application Diversity

Whale Cloud's OSS/BSS solutions are central to its business, especially in APAC. Nevertheless, its other solutions, such as DMC, which sits on the Digital Experience Platform (DXP), and Fiber as a Service (FaaS), are integral components of its comprehensive OSS/BSS suite.

The company's DXP for customer engagement helps CSPs unify fragmented customer data and improve digital engagement. By enabling personalized marketing, customer insights, and unified touchpoint management, the solution can enhance customer lifetime value (LTV) and reduce churn. The company's DMC solution, a part of DXP, utilizes big data and AI-powered platforms to provide precise marketing strategies and efficient execution methods for better marketing campaigns. Through omnichannel marketing reach and real-time performance analysis, the solution achieves closed-loop campaign management with live feedback and optimization. DMC integrates technologies such as gamification, loyalty programs, AI-powered personalization, and nudge technology to help CSPs increase revenue, reduce churn, increase operational efficiency, and enhance engagement. Whale Cloud's DMC has been cited as a game-changer with rich features and automation by customers.

The company's FaaS supports the end-to-end lifecycle management of fiber-to-the-home (FTTH) network deployment with automatic planning and design that can deliver up to 10,000 home passes per day and network efficiency and quality enhancements. The AI and AR-driven FaaS platform digitizes the entire process—from design and construction to acceptance—to boost deployment efficiency, improve asset transparency, and maximize fiber value. The company's Intelligent Network & Service Operation Center (iNOC) system utilizes AI/ML algorithms and large language models (LLM) in closed-loop network fault management to handle everything from self-monitoring and self-healing to improving network availability and service quality and enabling proactive customer care.

Customer Acquisition

Whale Cloud primarily serves medium to large-sized companies, including state-owned enterprises, CSPs, and government agencies. Solutions are sold as flexible, cloud-based deployments with monthly or annual billing, supporting public, private, hybrid cloud, and on-premises deployment options. The company also

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offers localized sovereign cloud and data localization capabilities. Its understanding of local regulatory, cultural, and infrastructure needs appeals to local government agencies that have data residency and sovereignty requirements and need secure, compliant cloud environments. Whale Cloud’s Local Public Cloud (LPC) solution is a good example of how the company addresses local compliance requirements to meet customer needs.

Whale Cloud strategically partners with Alibaba Cloud, ZTE, and selected ecosystem partnerships, including with Alipay+, to deliver end-to-end digital transformation for customers. In collaboration with Alibaba Cloud and leveraging Alibaba Cloud’s global data centers and cloud services, the company has developed eKYC and localized perceptive AI capabilities, such as document recognition, face recognition/matching, and liveness detection. By integrating into the digital mini-program ecosystem, it embeds AI-powered marketing capabilities into mini-programs and digital wallets. In collaboration with ZTE, the company combines ZTE’s strengths in AI servers and addressing the needs of the B2B segment with its competitive edge in the hardware-software integrated DocChainBox to offer a B2B2C resale model suited for CSPs and/or enterprises that offer AI knowledge base solutions tailored for SMEs.

To further aid customer acquisition in APAC, the company focuses on integrating AI into all of its solutions. Its successful OSS/BSS and smart city deployments in emerging markets are well recognized by industry participants. The company is specifically highlighted for its leadership in smart city and digital government, where it provides platforms for urban infrastructure (traffic, utilities, and public safety) management, e-government services, and public safety and surveillance. Learning points from smart city initiatives are wide and varied and can help solution development in other vertical industries. Whale Cloud solutions are tailored for emerging markets, with a focus on digital transformation, data sovereignty, local compliance, and cultural alignment. Paired with exceptional customer support from staff members willing to go the extra mile to ensure the project is delivered satisfactorily or the product is working as expected, responsive maintenance and development teams and strong SLA adherence, the company is building a solid track record, growing its reputation and driving customer retention that will help new customer acquisition for years to come.

Growth Potential

Its presence within its target markets and segments (stated above) where digital transformation and data sovereignty needs are growing rapidly and with the addition of WhaleDI AI, recognized for cost-effectiveness, flexibility, and AI innovation, to tap on the growing market demand for AI-driven OSS/BSS mean that Whale Cloud is well positioned to ride out a growth trajectory over the next three to five years. WhaleDI AI will do well in growing the use of AI orchestration within mobile services and other vertical

industries. The tight coupling of AI with industry operations is a key differentiator. In addition, other value-added capabilities (e.g., in Video Intelligence as a Service [VlaaS]) that analyze video streams to provide actionable insights and EDC are expected to play a significant role in enabling future growth. A good example is seen in how China Telecom Sichuan has developed a unified video intelligence platform with end-to-end capabilities that now monitors more than 10,000 connected cameras across over 10 industries, including smart farming, construction, and urban management, to empower SMEs and government agencies with tailored AI services. As an added advantage, WhaleDI AI is specifically designed to operate within sovereign cloud environments, ensuring data residency and compliance for governments and state-owned enterprises.

Based on its strategic direction and market recognition, Frost & Sullivan opines that Whale Cloud will experience above-average growth going forward and will be able to positively harness future opportunities to its benefit.

Conclusion

Whale Cloud has gone to great lengths to embed WhaleDI AI into its comprehensive OSS/BSS suite and end-to-end integrate AI across its platforms so that customers can leverage the power of AI as embedded AI capabilities across all solutions and layers. It would be exciting to see how WhaleDI AI will grow the use of AI orchestration in mobile services and other vertical industries in the next three to five years.

With its strong overall performance, Whale Cloud earns Frost & Sullivan's 2025 Asia-Pacific Technology Innovation Leadership Recognition in the AI-enabled OSS/BSS industry.

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Recognition is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Recognition Analysis

For the Technology Innovation Leadership Recognition, 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: 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 business performance is achieved in terms of revenue, 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: Leveraging innovative technology characterizes the company culture, which enhances employee morale and retention

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

VALUE IMPACT			
STEP		WHAT	WHY
1	Opportunity Universe	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	Transformational Model	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	Ecosystem	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	Growth Generator	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	Growth Opportunities	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	Frost Radar	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	Best Practices	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	Companies to Action	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

[Learn more.](#)

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:

- **Megatrend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

