FROST & SULLIVAN

Price/Performance Value Leadership Award

Global Gigabit Ethernet Test Equipment Market

GLOBAL

Contents

Background and Company Performance

Industry Challenges

Gigabit Ethernet (GbE) test equipment is used to develop and test equipment featuring Ethernet technologies. This market is experiencing increasing demand and will likely generate $1,675.5 million by 2022.

Demand has increased from service providers (SPs), network equipment manufacturers (NEMs), research and development (R&D) laboratories, and other enterprises for their varied bandwidth-hungry applications. However, the exponential expansion in data center activities, the proliferation of new technologies across various industries requiring seamless Internet connectivity, and the increase in mobile backhaul applications have intensified the competitive landscape in the GbE test equipment market.

To meet customer demand, test vendors are aggressively focused on improving their product lines and introducing frequent upgrades, to maintain an edge over their competitors. In addition, test vendors are concentrating their efforts on providing solutions that deliver higher performance and pricing benefits.

All GbE test equipment market participants continuously face pricing pressures. For this reason, companies must maintain parity between performance and price, thereby providing end users with access to improved functionalities at lower prices. Enhancing the value proposition of test equipment enables market participants to face the intense competition in the market and expand their market share.

Furthermore, the increasing complexity of protocols, faster data rates, greater port density, and higher quality standards pose a threat to market participants by requiring higher technical expertise. The need to include improvements and upgrade their solutions compels participants to design flexible, user-friendly, and robust solutions that can easily evolve over time, which, in turn, drives companies to increase their R&D investments to improve testing capabilities and minimize market challenges.

Price/Performance Attributes and Customer Impact

Innovative Capabilities

VeEX Inc., a leading provider of Ethernet testing solutions, has a unique product portfolio that provides high performance and powerful test solutions across 1 GbE, 2.5/5 GbE, 10 GbE, 25 GbE, 40 GbE, 100 GbE, and 400 GbE technologies. By developing its technological proficiency through stringent R&D efforts, VeEX has acquired a distinct edge over its competitors in the market in the form of a differentiated solution portfolio.

Highlighting the company's innovation and technological expertise, VeEX's major best-in-class product lines in the GbE test equipment market include the MTTplus, TX, RXT, RTU,

UX and MPA™ platforms, to address the different market segments. These products uniquely and cost effectively address the industry requirements of provisioning, activating, troubleshooting and performance monitoring next-generation Ethernet technologies used for core transport, mobile backhaul, business services, broadband services, and cloud networking.

Recently, VeEX enhanced the breadth of its product line with the RXT-6000e and RXT-6200 modules, with advanced dual-port 100-gigabit (G) testing capabilities. The RXT-6000e module perfectly complements the RXT platform, scoring high in ease-of-use, while providing advanced features, such as C-form factor pluggable 2 (CFP2), quad small form factor pluggable 28 (QSFP28) and SFP28 interfaces.

In addition, the RXT-6200 has a CFP4 form factor to support 100-G and 50-G applications. This dual port test device supports short and long reach connections (e.g., SR4 and LR4 transceivers) as well as active cables (AOC/DAC), thereby placing VeEX in a better position than its competitors to capture demand from service providers, data centers, NEMs and enterprises for 100-G modules. Moreover, VeEX's RXT-6x00 modules are industry-standard compliant and are seamlessly deployed across multi-vendor environments.

In addition to its RXT modules, VeEX offers the MPA platform that provides multi-port, multi-protocol, and multi-user transport testing, from 10 megabits (M) to 400G, for Ethernet in a compact rack-mounted platform. This platform offers a fast, simple, reliable, and intuitive remote user interface that supports up to 20 users simultaneously, which significantly reduces the amount of testing equipment required, footprint, and test times.

VeEX's highly differentiated and feature-enriched solutions provide end users with a flexible and cost-effective testing platform, concurrently helping the company increase both its efficiency and level of customer satisfaction. Using a common interface, VeEX's solutions reduce training and downtime, limiting cost of ownership. In addition, VeEX offers temporary licenses of test features and functions that are not needed on an ongoing basis by users, and allows the sharing of licenses so they can be used by those who need them at that particular moment. Customers also have the option to rent or lease the solutions. These business models enable customers to take control of their CAPEX and OPEX while providing them the functionality they really need for their activities.

Frost & Sullivan believes that these solutions clearly illustrate VeEX's excellence in Ethernet testing and its ability to provide unrivaled customer satisfaction through benefits such as increased user friendliness, minimized technological complexity, reduced operational expenditures (OPEX), minimized testing time, and optimized network performance.

Global Presence

Customers look for vendors that provide better support on a global scale. VeEX's multinational structure, consisting of specialized business units operating in different parts of the world, provides the company with further impetus for growth. Although a significant amount of VeEX's revenues come from the United States, the company has largely benefited from being born with an international focus. Its direct presence across Europe and Asia, and the acquisitions of Digital Lightwave and Agizer, have contributed to the company's global profile.

VeEX's management, finance, sales, and marketing entities are headquartered in Fremont, California, thereby capitalizing on the advanced technical and commercial resources that the Silicon Valley has to offer. The company's regional sales offices are located in Philadelphia, Pennsylvania; Shenzhen and Beijing, China; Bangkok, Thailand; Kuala Lumpur, Malaysia; Paris, France; Frankfurt, Germany; Mexico City, Mexico; Guatemala City, Guatemala; and Seoul, Korea. However, VeEX works through a channel of global distributors to provide local support to customers worldwide.

The company's R&D centers are strategically located in Fremont, Atlanta, and Tampa in the United States; Beijing and Chengdu, China; Plymouth, England; Montreal, Canada; and Minsk, Belarus, thus allowing VeEX to gather input from customers worldwide for product development. In addition, the company has its own state-of-the-art manufacturing facilities in Taipei, Taiwan, allowing the company to deliver high-quality, affordable products.

High Functionality at Affordable Prices

VeEX is known for its technological expertise that translates into innovative capabilities across its product portfolio. The company's products are at the forefront of the market, in terms of ease of use, quality, features, and reliability.

VeEX achieves these attributes through a significant focus on R&D; the company employs more than 50% of its workforce in R&D activities. Moreover, VeEX spreads its R&D investments and capabilities throughout the world.

VeEX engineers work closely with service providers and major semiconductor providers, such as field programmable gate arrays (FPGA) leaders Xilinx and Intel, to provide customers with quality products at affordable prices.

Brand Equity

VeEX has built a strong global customer base through its robust sales network, excellent customer support, and marketing efforts. VeEX's ability to address key market challenges with its technological expertise has further helped the company enjoy an edge in the market.

VeEX's testing solutions are employed by well-respected companies, including China Mobile, Chunghwa Telecom, Vodafone, AT&T, Verizon, Ericsson, Nokia Siemens Networks, UPC, and True.

Customer Support

VeEX has demonstrated a strong commitment to addressing urgent customer requests promptly, thereby maintaining the highest level of operational readiness and execution. The company's customer base comprises SPs, NEMs, and large global enterprises.

Furthermore, the company provides ongoing support by meeting with each customer to determine the best solutions that will fit their needs and supporting customers in their implementation process.

VeEX has a strong team of service application engineers (SAEs) that provides end-to-end support to clients, including training on the company's solutions, conducting installation and maintenance tasks, and offering 24-hour online customer support.

Conclusion

Frost & Sullivan research confirms that technological expertise and close customer collaboration have enabled VeEX to offer the best price/performance value in the global GbE test equipment market.

VeEX's strategy of developing best-in-class, cost-competitive products, in conjunction with the latest technologies, has substantially enhanced its position in the global market. Furthermore, VeEX funnels substantial resources into R&D and distribution, thus helping the company provide superior products with quality performance and, ultimately, deliver unrivaled customer value.

For its strong overall performance, VeEX is recognized with Frost & Sullivan's 2018 Price/Performance Value Leadership Award.

Significance of Price/Performance Value Leadership

Ultimately, growth in any organization depends upon customers purchasing from your company, and then making the decision to return time and again. A key component of customer retention is the delivery of a high-quality product at a reasonable price. To achieve these dual goals (customer engagement and price/performance), an organization must strive to be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Price/Performance Value Leadership

Best-in-class organizations are particularly successful in two critical areas: first, helping customers to appreciate and enjoy the product at every price point; and second, ensuring that customers perceive a demonstrable difference in performance features at every escalating price point. Ultimately, this balance allows companies to profitably deliver a variety of product options to customers, differentiate the product suite, and compete at every level of the market.

Key Benchmarking Criteria

For the Price/Performance Value Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Price/Performance Attributes and Customer Impact—according to the criteria identified below.

Price/Performance Attributes

Criterion 1: Functionality
Requirement: The product offers enhanced functionality to serve the broadest range of applications

Criterion 2: Ease of Use
Requirement: Customers typically feel that the products are easy to use to generate optimal performance

Criterion 3: Product/Service Quality
Requirement: Products or services offer the best quality for the price, compared to similar offerings in the market

Criterion 4: Performance Reliability
Requirement: The product consistently meets or exceeds customer expectations for performance over its life cycle

Criterion 5: Prioritization of Features
Requirement: The features that customers most value and expect are most commonly available and most aggressively priced

Customer Impact

Criterion 1: Perceived Value
Requirement: Customers typically feel that they received more from the product or solution than they paid for it

Criterion 2: Customer Purchase Experience
Requirement: Customers feel like they are buying the most optimal solution that addresses both their unique needs and their unique constraints

Criterion 3: Customer Ownership Experience
Requirement: Customers are proud to own the company's product or service, and have a positive experience throughout the life of the product or service

Criterion 4: Customer Service Experience
Requirement: Customer service is accessible, fast, stress-free, and of high quality

Criterion 5: Brand Equity
Requirement: Customers have a positive view of the brand and exhibit high brand loyalty

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate Award candidates and assess their fit with select best practices criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 **Monitor, target, and screen**	Identify Award recipient candidates from around the globe	• Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies	Pipeline of candidates who potentially meet all best-practices criteria
2 **Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practices criteria • Rank all candidates	Matrix positioning all candidates' performance relative to one another
3 **Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best-practices criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4 **Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best-practices positioning paper
5 **Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized Award candidates
6 **Conduct global industry review**	Build consensus on Award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7 **Perform quality check**	Develop official Award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8 **Reconnect with panel of industry experts**	Finalize the selection of the best-practices Award recipient	• Review analysis with panel • Build consensus • Select recipient	Decision on which company performs best against all best-practices criteria
9 **Communicate recognition**	Inform Award recipient of Award recognition	• Present Award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 **Take strategic action**	Upon licensing, company is able to share Award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess Award's role in future strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree-view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practices models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.

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