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BEST PRACTICES

AWARDS

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2020 BEST PRACTICES AWARD

Volterra

**2020 NORTH AMERICAN DISTRIBUTED CLOUD
TECHNOLOGY INNOVATION LEADERSHIP AWARD**

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Background and Company Performance

Industry Challenges

Globally, increasing numbers of data-driven applications are compelling enterprises to move towards edge computing. In parallel, a majority of enterprises are adopting multi-cloud and hybrid cloud strategies, but the siloed environments and service portfolios within each cloud are effectively restricting the deployment of applications across multiple providers. Moreover, large volumes of data and applications reside outside data centers in multiple clouds or enterprise edge sites, leading to data management and security concerns such as data privacy and identity management. Hence, enterprises find it difficult to distribute and manage applications due to inconsistent operational and security policies -- as well as end-to-end visibility -- across these various environments.

With the increasing number of apps and devices present in ever more connected ecosystems, there is a requirement for a consistent and integrated full-stack solution across multi-cloud and edge locations that can securely facilitate interoperability, simplified operations and strategic workload distribution. In both edge and multi-cloud environments, apps are often widely distributed across sites or different providers, hence creating greater operational challenges and overhead to support integration. Different sets of application programming interfaces (APIs) coupled with disparate architectures create complexities in effective application deployment, security and management, thereby negatively impacting performance and reliability. At the same time, the commercialization of 5G poses a further challenge of upgrading IT infrastructure and operations to handle heavy workloads at edge sites.

A consistent and distributed cloud environment that can ensure secure and efficient deployment as well as manage distributed applications across a global heterogeneous set of multi-cloud, on-premises locations and edge sites is required to meet these challenges. Specifically, enterprises need a unified and cost-effective solution with cloud-native services that enable applications to be distributed closer to data across disparate environments without sacrificing performance, security or operability.

Technology and Business Impact of Volterra

Headquartered in Santa Clara, California, Volterra provides a cloud-native, software-as-a-service (SaaS)-based distributed cloud services platform. With the ability to deploy, connect and secure distributed applications with full scalability, Volterra provides enterprises with a full-stack solution across multiple cloud, edge or data center locations.

Volterra's distributed cloud platform integrates a wide range of services traditionally operated as siloed services within and across cloud or edge sites. The result is much faster application deployments, simplified operations, end-to-end visibility and significantly lower operations cost. Volterra's platform also ensures multi-layer security for cloud workloads and high-performance global connectivity across clouds and the edge. Thus, the platform acts as an integrated foundation for the secure delivery of modern applications to different operating sites in distributed environments.

Frost & Sullivan appreciates Volterra's leadership in addressing the emerging distributed cloud market's critical operational challenges while delivering a consistent cloud-native

experience for enterprises. Their distributed cloud platform addresses the needs of customers across diverse industries including retail, automotive, manufacturing, e-commerce and telecom in both multi-cloud and edge environments, ensuring secure application delivery and management.

Volterra developed its platform to meet enterprises' demands for a "consistent cloud environment everywhere" through distributing workloads across multiple clouds and the edge, while enabling delivery at scale. Volterra's platform achieves these objectives through its two core services: VoltMesh™, VoltStack™ as well as VoltConsole™ for management and operations.

- **VoltMesh** enables high-performance networking and zero-trust security for interconnected workloads within or across clouds, as well as the edge. VoltMesh provides a broad set of services including API gateway, load balancing, service mesh, routing and firewall with a common management portal, radically simplifying provisioning and providing full integration across services.
- **VoltStack** enables application deployment and management, clustering, distributed storage, Kubernetes management, and application security across multiple cloud and edge locations. VoltStack and VoltMesh can be leveraged by enterprises to integrate app infrastructure with app management, thus enabling a full cloud environment at the edge.
- **VoltConsole** offers centralized management through a portal comprised of custom dashboards, logs and metrics, and multi-tenancy to ensure smooth operations of distributed applications on a global scale.

Unlike competitors, Volterra's major differentiating factor is its scalable, end-to-end distributed architecture, as well as broad set of networking, security and app management capabilities, that together accelerate app deployments while simplifying ongoing operations across multiple clouds and/or 1000s of edge sites. The platform further enhances security and reliability for modern apps distributed across multiple clouds through its API gateway and API discovery and control capabilities, thereby facilitating smooth deployment and operation of API-rich apps and environments.

Another key differentiator and benefit to customers is that Volterra's integrated stack is wholly SaaS-based, simplifying operations and increasing agility. Frost & Sullivan is impressed that Volterra's platform provides such a wide range of capabilities and supports a large number of use cases.

Minimizing Overhead While Maximizing Scope and Performance

Volterra's distributed cloud platform cost-effectively provides cloud-native services across multi-cloud, network and edge environments. In complement to that, the company offers a high-speed, secure private network so enterprises can deliver distributed applications with better performance and at lower cost.

Unlike competitors who are unable to accommodate the full technology infrastructure stack required to host, connect and secure apps, and manage their operations, Volterra's

fully-integrated platform enables operations through a common set of dashboards, policies and operations.

Finally, the company's SaaS-based offering enables the option to offload application hosting onto the network, enhancing the end user experience by moving workloads closer.

Volterra is successfully deployed across market sectors and currently has over 50 customers, including the top-five global telco Softbank and top European e-commerce provider Cdiscount.

For example, Cdiscount wanted to transform its traditional online marketplace into a cutting-edge cloud-based business offering where it is possible to host and leverage infrastructure services for performance optimization, increased resilience and increased application security. It also wanted to optimize operations, including minimizing revenue loss attributable to website downtime. Cdiscount collaborated with Volterra to address its operational and security concerns across multiple cloud environments. Upon leveraging Volterra, Cdiscount maximized its resiliency and security, thereby improving the end user experience.

Frost & Sullivan believes Volterra's unique ability to distribute a full set of cloud services will have a meaningful and near-term impact on the speed of adoption of multi-cloud and distributed cloud architectures, as well as a mid-term effect on the edge computing market, which will take more time to be defined and broadly deployed.

Innovation is also embedded in the company's DNA. Volterra's co-founder and CEO, Ankur Singla, helped pioneer the development of software-defined networking when he founded Contrail (acquired by Juniper) and specializes in scaling start-ups and new businesses (he led the development of Juniper's first switching products several years earlier). The company boasts a dedicated team of over 100 experts specializing in carrier and enterprise-grade networking and computing infrastructure. With its strong human capital and collective expertise, Volterra is well-positioned to help enterprises manage the transition to multi-cloud and edge cloud environments.

In 2019, Volterra launched from stealth with \$50 million in investment to date from top venture capital investors such as Khosla Ventures, Mayfield, M12 (Microsoft), Itochu Technology Ventures and Samsung NEXT.

Conclusion

The ongoing digital transformation of enterprises is driving demand for distributed applications and data-driven use cases, with consistent cloud computing frameworks playing a crucial role. Volterra's innovative distributed cloud services platform and SaaS-based model enables enterprises to cost-effectively meet modern and distributed application management requirements while ensuring high-performance delivery across multi-cloud environments and edge sites. Leveraging its highly innovative technology and cloud-native format, end users can efficiently deploy, connect and secure applications through a full stack of cloud services on a single platform. For its technical excellence, thought leadership, and powerful value proposition, Volterra earns Frost & Sullivan's 2020 Technology Innovation Leadership Award.

Significance of Technology Innovation Leadership

Technology-rich companies with strong commercialization strategies benefit from the demand for high-quality, technologically innovative products that help shape the brand, resulting in a strong, differentiated market position.



Understanding Technology Innovation Leadership

Technology innovation leadership recognizes companies that lead the development and successful introduction of high-tech solutions to customers' most pressing needs, altering the industry or business landscape in the process. These companies shape the future of technology and its uses. Ultimately, success is measured by the degree to which a technology is leveraged and the impact it has on growing the business.

Key Benchmarking Criteria

For this Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated 2 key factors—Technology Leverage and Business Impact—according to the criteria identified below. The list of Market Participants for Distributed Cloud includes: Aviatrix, F5, VMware and Volterra.

Technology Leverage

- Criterion 1: Commitment to Innovation
- Criterion 2: Commitment to Creativity
- Criterion 3: Technology Incubation
- Criterion 4: Commercialization Success
- Criterion 5: Application Diversity

Business Impact

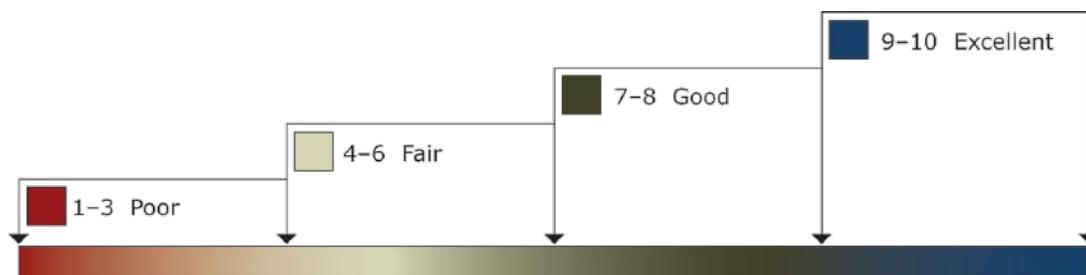
- Criterion 1: Financial Performance
- Criterion 2: Customer Acquisition
- Criterion 3: Operational Efficiency
- Criterion 4: Growth Potential
- Criterion 5: Human Capital

Best Practices Award Analysis for Volterra

Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows research and consulting teams to objectively analyze performance according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation. Ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard considers Technology Leverage and Business Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, Frost & Sullivan has chosen to refer to the other key participants as Competitor 1 and Competitor 2.

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
Technology Innovation Leadership	Technology Leverage	Business Impact	Average Rating
Volterra	9.5	9	9.2
Competitor 1	7.5	8	7.7
Competitor 2	7	7.5	7.2

Technology Leverage

Criterion 1: Commitment to Innovation

Requirement: Conscious, ongoing development of an organization’s culture that supports the pursuit of groundbreaking ideas through the leverage of technology.

Criterion 2: Commitment to Creativity

Requirement: Employees rewarded for pushing the limits of form and function by integrating the latest technologies to enhance products.

Criterion 3: Technology Incubation

Requirement: A structured process with adequate investment to incubate new technologies developed internally or through strategic partnerships.

Criterion 4: Commercialization Success

Requirement: A proven track record of commercializing new technologies by enabling new products and/or through licensing strategies.

Criterion 5: Application Diversity

Requirement: The development of technologies that serve multiple products, multiple applications, and multiple user environments.

Business Impact

Criterion 1: Financial Performance

Requirement: Overall financial performance is strong in terms of revenue, revenue growth, operating margin, and other key financial metrics.

Criterion 2: Customer Acquisition

Requirement: Overall technology strength enables acquisition of new customers, even as it enhances retention of current customers.

Criterion 3: Operational Efficiency

Requirement: Staff is able to perform assigned tasks productively, quickly, and to a high-quality standard.

Criterion 4: Growth Potential

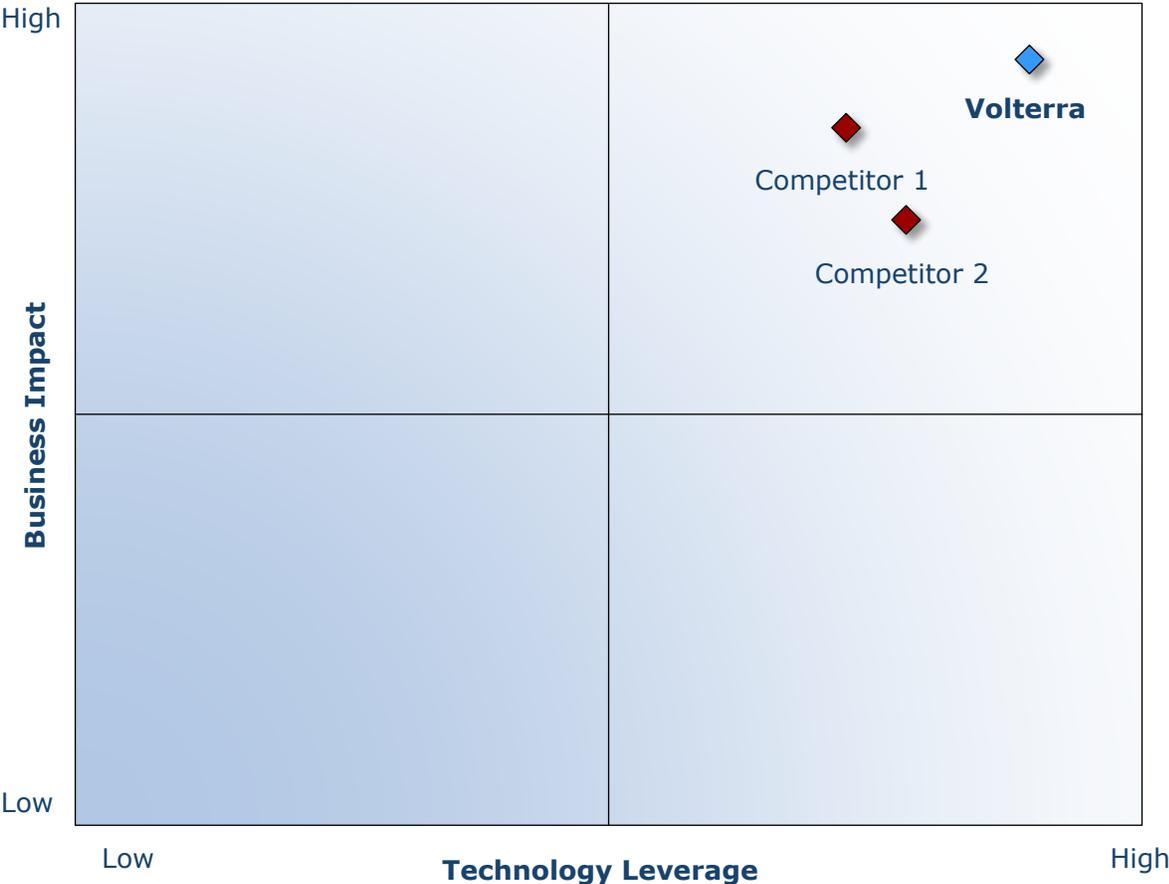
Requirements: Technology focus strengthens brand, reinforces customer loyalty, and enhances growth potential.

Criterion 5: Human Capital

Requirement: Company culture is characterized by a strong commitment to customer impact through technology leverage, which enhances employee morale and retention.

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.



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 world	<ul style="list-style-type: none"> • Conduct in-depth industry research • Identify emerging industries • Scan multiple regions 	Pipeline of candidates that potentially meet all best practices criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> • Interview thought leaders and industry practitioners • Assess candidates' fit with best practices criteria • Rank all candidates 	Matrix positioning of all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 recognition	<ul style="list-style-type: none"> • Announce 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	<ul style="list-style-type: none"> • Coordinate media outreach • Design a marketing plan • Assess award's role in 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 the 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, resulting in 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 players and for identifying those performing at best-in-class levels.



About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients 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 practice models to drive the generation, evaluation and implementation of powerful growth strategies. Frost & Sullivan leverages nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan’s Growth Partnership, visit <http://www.frost.com>.