FROST & SULLIVAN

FROST & SULLIVAN BEST PRACTICES AWARD

CLOUD-BASED NETWORK OPERATIONS - GLOBAL

Product Line Strategy Leadership 2019

kentik®

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2019 BEST PRACTICES AWARD

Contents

Background and Company Performance

Industry Challenges

A key trend among service providers and enterprises is the increased amount of digital data flowing across the network infrastructure. Traditional monitoring appliances deployed on the network infrastructure cannot keep up with the increased volume and complexity of the generated traffic, which is compounded by the reality that application development teams do not have adequate visibility into the network infrastructure.

Because of the rise in compute workload automation, network engineers are unable to anticipate how the network load will change. Application teams generally assume the network capacity will be adequate and are not sufficiently informed of the impact that applications can have on the network infrastructure. In addition, network engineers are challenged with identifying the specific applications impacting the available bandwidth, analyzing the cause, and then determining how to make applications leaner.

The high degree of heterogeneity of the network infrastructure is another important challenge that is yet to be adequately addressed. While an increasing number of service providers and enterprises have applications in the cloud, most of them still have some applications in their owned data centers. These applications often communicate with one another through cloud interconnects, and understanding how the different components on different types of infrastructure interact with each other can be difficult. The challenge associated with that lack of understanding further compounds the task of drilling down to the application that is consuming substantial bandwidth and possibly finding a more efficient way to re-route existing traffic to optimize the network traffic flow.

As automation continues to grow, security threats need to be addressed as well because the stakes are higher with the multi-tenancy of cloud infrastructure.

Product Line Strength and Customer Impact

Brand Equity

Founded in 2014, San Francisco-based Kentik has 80 employees, many of whom are engineers and former executives from the telecom industry. Kentik Detect™ is the company's core product offering. Built from the ground up, Kentik is a powerful software-as-a-service (SaaS)-based network analytics engine that offers crucial network insights by analyzing different types of network traffic. Kentik is suitable for end users with traditional physical network infrastructure, cloud environments, or a mix of both.

To date, Kentik has raised nearly $40 million in funding, and its current revenue is 15 times higher than in 2006, with over 200 service providers and enterprises worldwide using its platform. Kentik's growth and their platform's high degree of traction among end users are a testament to the company's ability to address the unmet need of optimizing operations across all types of cloud infrastructure.

To enhance the product's global outreach, Kentik has forged alliances with a variety of technology companies, such as A10 and Radware, as well as many channel partners worldwide. These partnerships allow Kentik to offer its product as part of a larger turnkey solution, stay in tune with customers' challenges, and introduce product upgrades in subsequent versions accordingly.

Features

As applications continue to be deployed in virtual machines and containers, the Internet Protocol (IP) address can no longer be used as a reliable identifier because it has become so dynamic that it can be reassigned to other containers that have a different set of use cases by the hour. Therefore, mapping individual IP addresses to higher order metadata, such as application names, customer names, and team names, is essential. By doing so, a more meaningful context can be derived that allows network engineers to determine the core issues of the disaggregated network and then neutralize them effectively.

Competing solutions are more traditional tools in this respect. For example, by simply monitoring and analyzing the network traffic, traditional tools are not as effective because they collect, measure, and analyze predefined clusters of data from the wide pool of raw information available. Therefore, the "last mile" of information that identifies the root cause of network issues for a particular application is difficult to attain, thus hampering the engineer's ability to resolve network issues like congestion, failing hardware, or malicious activity. Moreover, traditional tools are often siloed in terms of network versus security use cases because individual teams operate from different tools or data sources and thus cannot efficiently share their resources.

A key feature of Kentik's platform is bringing observability to the network layer of the application stack. Introduced by the cloud native computing foundation (CNCF), observability is the concept of gathering and storing granular, real-time data, enhancing it with tags or labels to add context, and then leveraging that data to solve problems or answer key questions. To provide observability for networks, Kentik tags raw network data with business-level attributes, along with other information, such as geolocation and routing data, to ascertain the network's path. Tagging the traffic with many threat indicators allows engineers to identify any malicious traffic.

Frost & Sullivan commends Kentik for delivering an analysis solution that unifies the needs of both network and security teams and provides a more meaningful fault analysis of the network and its associated applications.

Technology

Kentik's platform runs on a bare metal infrastructure hosted in Equinix data centers, and is delivered to customers primarily as a SaaS offering, although on-premise options are also available. Customers deliver data to Kentik over the internet, or via private interconnects from their infrastructure. Kentik collects flow data including NetFlow, sFlow, and IPFIX, from

traditional network hardware like routers and switches. Kentik also consumes virtual private cloud (VPC) flow logs from AWS and Google cloud infrastructure, and NSG flow logs from Microsoft Azure. The raw data becomes enriched with context data, such as geolocation, application names, service names, and item names, thus enhancing the platform's power of observability, which is a technology function that is missing from most traditional solutions on the market.

The backend of the Kentik platform is the Kentik Data Engine (KDE), a proprietary distributed column-store database that collects, enriches and stores large volumes of raw network data. Through the platform's front-end, the Kentik Portal, KDE can recreate entire conversations that occurred on the network, based on boundary conditions supplied by the customer. Users can also use the Kentik Portal to run queries, build dashboards, drill down into the data, and get examples for interacting with RESTful application programming interfaces (APIs).

The entire platform is API first, meaning it is easier to integrate the solution with other tools or solutions built in-house by the customer. Engineering the platform as API first is a big improvement over most other solutions that do not have many APIs, which limits the integration with other applications in data centers situated across different regions worldwide.

Kentik also integrates with distributed denial-of-service (DDoS) mitigation appliances from third-party vendors, such as A10 and Radware. The platform triggers those appliances to divert possible malicious traffic and break down the barrier between the network operations team and the security operations team. Based on Frost & Sullivan research, Kentik is expected to partner with more technology vendors to enhance its interoperability even further.

The Kentik platform's ability to integrate seamlessly with most other third-party solutions used by end users and the broad range of technology vendors with whom Kentik partners have enhanced the solution's interoperability and pervasiveness across a broad spectrum of end users.

Price Performance

According to a survey conducted by Kentik, customers are often challenged by the cost management of cloud deployments because cloud application and development teams are often unaware of the costs associated with specific cloud components. This challenge has been exacerbated by inadequate visibility between teams, particularly between application development teams and the network engineering team, as well as by the inability to break down cloud costs so they can be allocated to specific teams and applications.

One of Kentik's key value propositions is its solution's ability to break down cloud network utilization into top contributors by region, application, team, or other dimension to identify the item that is generating a significant amount of traffic and then determine ways to

optimize that application or team. Another feature for end users that was not previously offered by traditional solutions is enhanced visibility into traffic generated by different customers. This visibility is useful for Internet transit providers because by viewing regional traffic on a customer-by-customer basis, the Internet transit provider can offer better service at a more competitive price.

Furthermore, this visibility enables service providers to offer more product differentiation by correlating variables, such as traffic volume and distance. This capability continues to be a huge driver in terms of sales, particularly in the overall service provider market.

Customer Ownership Experience

The Kentik solution allows customers to view all the information in a single interface, wherein network engineers can quickly respond to queries and reduce the mean time to repair (MTTR). The Kentik solution enhances the visibility across different network tiers and then correlates network traffic with different business attributes, such as geolocation and routing data. This capability reduces operating expenditures by empowering network engineers with the crucial knowledge on intricate interactions between different network applications, which can then be used to optimize individual applications without incurring massive repercussions on the network infrastructure.

A use case example is the implementation of Kentik at Limelight Networks, a large global content delivery network (CDN) provider. CDN providers must deliver Web sites, applications, videos and other content with very low response times so resolving network issues quickly is a key capability for these organizations. After implementing Kentik's solution, Limelight Networks' MTTR was reduced from 90 minutes to less than 20 minutes. Moreover, Limelight Networks received a cost-savings by optimizing its traffic flow across the network infrastructure. For example, before upgrading the Chicago-to-Dallas route, network engineers discovered that half of the traffic was taking a longer route, rather than taking a shorter and more direct route between geographies. The issue resolution rendered the proposed capacity upgrade unnecessary because Limelight Networks reduced the traffic on the existing link based on the visibility provided by Kentik's solution.

Moreover, the network upgrades that were later deemed unnecessary because of Kentik's solution helped Limelight Networks save on operational costs of over 6% of the total company revenue in the first year after deployment.

Based on Frost & Sullivan analysis Kentik's platform enables engineers to discover previously unknown factors and provides visibility on how such factors are integrated with other pressure points on network and cloud infrastructure. Engineers are now empowered to make informed decisions on which components to optimize, thereby keeping operating expenditures in check.

Conclusion

Cloud computing is enjoying a high degree of traction among enterprises and service providers. While this traction remains unabated, many factors continue to be overlooked that can dramatically impact the cost, performance and security of network infrastructure in the long run. Additionally, adoption of workload automation is making network loads less predictable, and if not optimized properly, the traffic generated can substantially impact the performance and reliability of the infrastructure. Without adequate visibility it becomes impossible for network operators to detect and understand the root cause of these issues.

By using Kentik's solution, customers receive an in-depth understanding of the different types of applications that reside on the network and the amount of bandwidth they individually consume. This understanding improves the MTTR by a significant margin and helps operators identify any unnecessary network upgrades, thus enabling operators to save on operating expenditures.

With its strong overall performance, Kentik has earned Frost & Sullivan's 2019 Product Line Strategy Award in the global cloud-based network operations industry.

Significance of Product Line Strategy

Ultimately, growth in any organization depends upon customers purchasing from a company and then making the decision to return time and again. A full, comprehensive product line that addresses numerous customer needs and preferences is, therefore, a critical ingredient to any company's long-term retention efforts. To achieve these dual goals (customer value and product line strength), an organization must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Product Line Strategy Leadership

As discussed above, driving demand, strengthening brand, and differentiating from the competition all play a critical role in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on building a superior and comprehensive product line.

Key Benchmarking Criteria

For the Product Line Strategy Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Product Line Strength and Customer Impact—according to the criteria identified below.

Product Line Strength

Criterion 1: Breadth
Criterion 2: Scalability
Criterion 3: Technology Leverage
Criterion 4: Features
Criterion 5: Supply Chain Reliability

Customer Impact

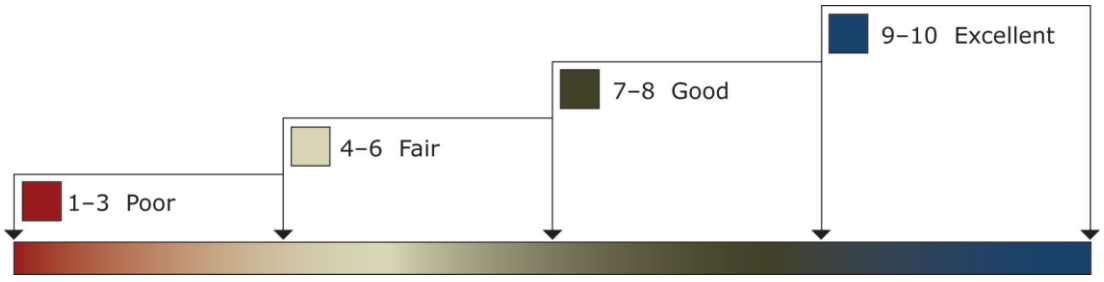
Criterion 1: Price/Performance Value
Criterion 2: Customer Purchase Experience
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Best Practices Award Analysis for Kentik

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 our 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 is organized by Product Line Strength and Customer Impact (i.e., These are 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, we have chosen to refer to the other key participants as Competitor2 and Competitor3.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Product Line Strategy	Product Line Strength	Customer Impact	**Average Rating**
Kentik	**8.7**	**8.8**	**8.8**
Competitor2	8.2	7.8	8
Competitor3	7.5	7.6	7.6

Product Line Strength

Criterion 1: Breadth

Requirement: Product line addresses the full range of customer needs and applications.

Criterion 2:Scalability

Requirement: Product line offers products at a variety of price points and functionality levels.

Criterion 3: Technology Leverage

Requirement: Demonstrated commitment to incorporating leading-edge technologies into product offerings results in greater product performance and value.

Criterion 4: Features

Requirement: Products offer a comprehensive suite of features to serve customers at multiple levels of functionality, ease of use, and applications.

Criterion 5: Supply Chain Reliability

Requirement: There is sufficient control over the supply chain to ensure availability of key components and thereby the availability of products in the product line.

Customer Impact

Criterion 1: Price/Performance Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience

Requirement: Customers feel 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

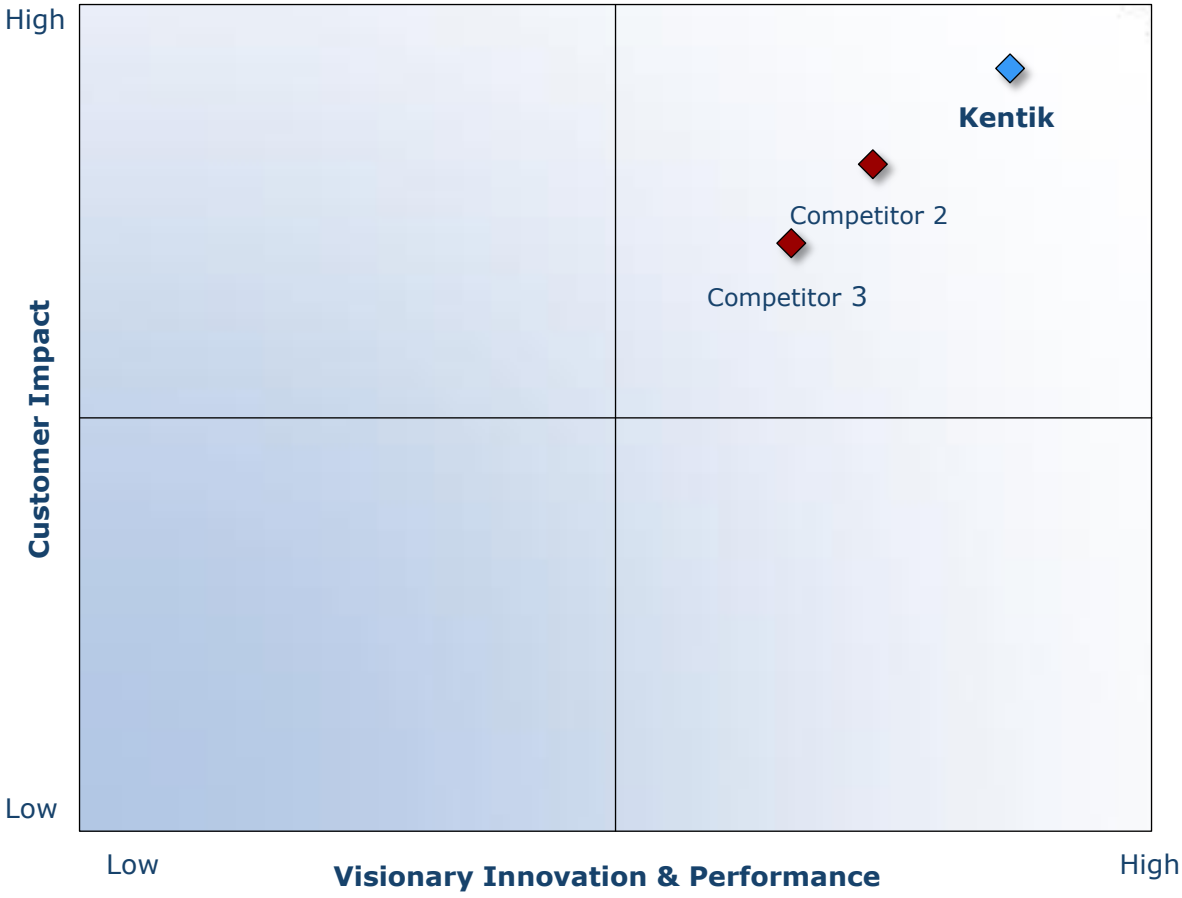
Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity

Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

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 practice 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-practice 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-practice 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	• Confirm best-practice 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-practice 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-practice Award recipient	• Review analysis with panel • Build consensus • Select winner	Decision on which company performs best against all best-practice 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 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 practice 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.