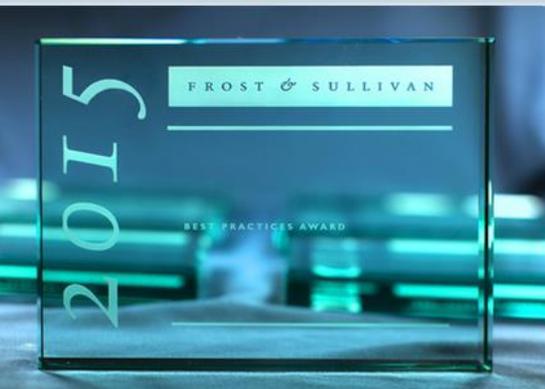




2015 North American Cloud Management Services
Competitive Strategy Innovation and Leadership Award



FROST & SULLIVAN



50 Years of Growth, Innovation & Leadership

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Background and Company Performance

Industry Challenges

Self-service is at the heart of cloud computing. Self-managed cloud platforms enable on-demand access for enterprise users, while allowing IT to retain a measure of control that safeguards the environment. Many robust platforms enable service integration and management as well as automation of routine tasks, which in turn allows IT to focus more on innovative development. For providers, self-servicing offers a way to contain costs while enabling customer-managed services.

Cloud management platforms and the web-based interfaces that allow users to interact with the provider's services are the face of the cloud to the customer. As such, they provide much needed functionality, from the ability to visualize, deploy, and manage cloud services in a manner that's most effective for the enterprise.

Enterprise users find two features necessary to any cloud management platform: visibility and control. Visibility offers the user the capacity to view all of the cloud resources subscribed to in one easy to read dashboard. IT can use visibility dashboards to ensure that resources are being adequately consumed and are not over-provisioned, and that everything is operating as it should. Control offers the ability to manipulate how cloud resources are configured, and to deploy new resources as business requirements demand.

Most cloud service providers have moved beyond basic functionality and added enhanced features as a means of differentiating their management platforms. Specifically, many providers have added one or more of the following elements:

- User customization
- Smart analytics
- Policy-based automation
- Mobile integration, or
- Open Source Application Programming Interfaces (APIs).

Today, cloud service providers vary in the features and functionality that they offer within their cloud management platforms. One provider, Cloudnexus, has shown excellence, both in understanding what enterprises need from a robust cloud management platform as well as in implementing such a solution for customers.

Market Leadership of Cloudnexa

Criterion 1: Strategy Effectiveness

Cloudnexa, a Philadelphia, Pennsylvania-based managed services provider, has identified a market need in how customers manage their Amazon Web Services (AWS) infrastructure resources. While AWS leveraged the self-service, utility cloud computing model and monetized it through rapid evolution of a vast portfolio of resources, Cloudnexa recognized that customers often required better visibility across many AWS accounts, and management assistance that would allow them to aggregate visibility and control of their AWS deployments in a single management platform. This recognition was a result of working with organizations trying to manage AWS cloud deployments on their own, and recognizing the need for appropriate experience, tools and/or resources.

Cloudnexa targeted customers that liked the utility computing model and already subscribed to existing AWS resources, as well as traditional outsourcing customers that liked the utility-based model of cloud computing. To appeal to these customers, Cloudnexa developed a utility-based managed service cloud management platform (called vNOC) that would provide more comprehensive AWS environment management out-of-the-box than AWS provides to customers itself.

Cloudnexa realizes the bias of being 100% AWS-captive, but counters that their focus on a single provider has allowed them to hone a service that meets and exceeds customers' needs and allows them to fully deliver on a utility cloud computing model, even for cloud management services. The company was one of the first AWS reseller partners, and a current APN Premier Consulting Partner. Cloudnexa has also achieved AWS Managed Service Partner Status, which is based on a rigorous audit.

Their strategy has been successful to date: since launching the company Cloudnexa has grown to manage more than 3 million customer instance hours per month on the AWS platform, which the organization manages utilizing its own vNOC cloud management platform.

Many competitors in the cloud management space have focused more on the actual infrastructure resources that they offer to customers than to the management of those resources. This strategy may be somewhat ineffective, as the cloud management platform is the primary interface that the customer has with the cloud. If the management platform is not intuitive to users, or does not provide desired functionality or automation, then the customer's experience with the cloud will be diminished as a result.

Criterion 2: Strategy Execution

As a whole, the Cloudnexa vNOC management platform greatly enhances the user's experience interacting with AWS service portfolio, with automated functionality for

provisioning and management of services, more robust search, sort, and filtering capabilities to find and manage resources more easily, the ability to aggregate AWS accounts in order to gain visibility across geographies and business units, and enhanced reporting ability. The Cloudnexus vNOC management platform provides users with a clear, intuitive interface, enhanced visibility, and the control that the customer needs across the entire AWS environment.

Cloudnexus has designed its vNOC Management Platform as a stateless single-page application that offers a global view of the customer's AWS architecture, regardless of the number of AWS accounts the customer maintains. It is designed to be robust in features, but light in density. The platform is designed to add management functionality to the AWS environment, including enhanced management in the areas of:

- Provisioning
- Billing
- Resource management
- Security
- Governance.

vNOC also has reporting capabilities across all of these functions, adding greater benefits over using the AWS Console.

Cloudnexus's vNOC links all of a customer's AWS accounts in order to manage them from a single platform. Resource groups by business unit or geography can also be created comprising resources across multiple AWS accounts in order to better accommodate management or billing queries. For management tasks that the AWS Console handles directly, Cloudnexus vNOC customers can have single-click access from vNOC to the AWS Console. User access is federated, so that users logged into vNOC do not need to log in a second time to access the AWS Console.

vNOC also aggregates events across all of a customer's AWS accounts and resources, whether compute, storage, databases, or any other services AWS offers. vNOC compiles alerts from CloudWatch—the AWS monitoring service for AWS cloud resources and the applications—into its platform, making them easily viewable and searchable from vNOC. Cloudnexus does not put time limitations on aggregated alarms, allowing customers to view or search alarms from the time the service was turned on through the present. This functionality is useful for tracking recurring or systemic alarms over time.

Also on the dashboard are:

- Visual views of the highest-use CPUs

- Current service limits and usage in comparison to limits
- Trusted Advisor — a user interface to this cost optimization information that shows where customers can change their configurations in order to save money and avoid potential issues before they occur.
- URL monitor — which can be configured to ping any URL and provided feedback and alerts if an issue or outage occurs.

Beyond the vNOC dashboard, Cloudnexus offers a variety of other capabilities, including:

- **Cloud Manager** — including a global view of all AWS resources and services across all of the geographies that AWS services. Resources are able to be sorted and filtered down to a particular instance, and historical views of instances that were in use but are now turned down is also available. Exhibit 5 shows the vNOC Cloud Manager dashboard view that comprises this capability.
- **Security** — Cloudnexus vNOC platform aggregates and provides a consolidated view of the secure socket layer (SSL) certificates that protect all of the AWS resources within a customer's environment. These are also able to be searched, sorted, and filtered based on specific criteria.
- **Audits** — Through the audit portion of the vNOC platform, IT can review all of the usage logs and activity on its cloud environment through aggregated views of AWS CloudTrail. Logs are searchable and sortable, and there is no time limit on the historical logs that customers can access.
- **Reports** — vNOC offers a detailed view of the customer's spend across all AWS accounts. Like most other information in the vNOC platform, costs are searchable, sortable, and filterable based on customer criteria, and details can be exported as a .CSV file for use in a customer's third-party billing systems. Compliance reporting and specialized reports specific to the enterprise's needs are also available.
- **Identity Services** — This function allows customers to define users and groups, as well as role-based access to resources and services.

While many competitors embrace several of these needed functions within their cloud management platforms, none embrace all of them while also offering a utility, pay-as-you-use pricing model that enhances value for customers.

Criterion 3: Competitive Differentiation

The Cloudnexus vNOC management platform for AWS is a unique product and service that enables customers to manage multiple AWS accounts within a single management platform—something that neither AWS nor other competitors currently offers. The product also provides value-added capabilities in the areas of billing and reporting support, automation, as well as in general management through the use of historical data to improve future performance. Cloudnexus puts no limitations on the amount of data that can be reviewed and analyzed in order to improve the customer's cloud configuration, and thus, performance.

Several other platforms studied had the capability to manage multiple accounts or regions within the management platform, but most require the user to switch between different screens to do more than view basic dashboard information. In contrast, the Cloudnexus dashboard is robust, providing numerous details about many different aspects of the cloud service—from instances deployed to alerts to usage and billing—right from the home page dashboard. The dashboard is also among the most graphically pleasing, easy to navigate and customize based on the end user that is accessing it. Cloudnexus's vNOC embodies all of the functionality that enterprises desire in a robust cloud management platform.

Criterion 4: Price/Performance Value

Cloudnexus's utility-based pricing model for value-added, managed cloud services such as vNOC is unique in the market today. While competitors in the managed cloud space are signing longer-term contracts that entail monthly recurring revenues for services rendered, Cloudnexus offers both free and self-service versions of its vNOC product. The self-service offering provides the full management platform to all clients purchasing AWS services through Cloudnexus, at no additional cost. When purchased in conjunction with the company's Managed Cloud offering, managed services along with vNOC are provided for free until a client spends \$2,000 per month on AWS, and then a utility pricing model begins and the client pays only 18 percent of their AWS spend for managed cloud services or 47 percent for a premium offering.

Utility pricing for managed services—especially cloud management—is rare in the cloud market today. While consumption-based pricing is standard for cloud infrastructure, Cloudnexus is one of very few providers that have been able to effectively extend the consumption or utility-based pricing model to managed services such as billing and management support as offered through the vNOC cloud management platform.

Criterion 5: Customer Purchase Experience

Cloudnexus makes the cloud purchase experience simple, and due to the consumption-based pricing, there are no upfront costs when using Cloudnexus vNOC service. Customers subscribing to the service are completely up and running before the first monthly bill is levied.

As a managed cloud provider, Cloudnexus does make cloud architects and advisors available to assist customers in linking their AWS accounts to the Cloudnexus vNOC service. It also has created processes for provisioning that help customers to use AWS best practices as they deploy new instances within their AWS environments. Leveraging its long history and experience as a systems integrator, Cloudnexus has systematized its processes for on-boarding new customers, making the entire on-boarding process smooth and easy.

In contrast, many other providers' cloud platforms are offered as a part of the provider's

cloud infrastructure service, many of which are self-service. Competitors' lack of managed service assistance makes the subscription and migration process more cumbersome.

Criterion 6: Customer Ownership Experience

Cloudnexus reports that its vNOC customers are:

- Attempting to manage multiple AWS accounts and challenged by visibility of the total enterprise spend with AWS, or
- Customers with traditional outsourced relationships who are accustomed to handing over management of their IT services, and want to do the same with a complex cloud environment, or finally,
- Running instances well in the cloud but lacking in visibility as to the spend that they are accruing or the health of the complete environment that they are running.

Using the Cloudnexus vNOC, these customers gain visibility across their complete AWS infrastructure environment, something that can be challenging if the customer subscribes to multiple cloud accounts, as well as value-added services that make using the cloud environment and reporting on spend, business objectives, security, and compliance with industry regulations far easier than ever before. The hundreds of customers, thousands of environments and millions of instance hours that Cloudnexus currently has deployed on AWS with management from its vNOC platform is testament to the experience of the customers that use the service.

While competitors do offer cloud management platforms that vary in effectiveness, none offer the level of professional service or ease of use that Cloudnexus entails.

Conclusion

Robust cloud platforms provide customers with two key functions: 1) visibility into their cloud environments, and 2) control over resources within those environments. Enterprise users expect a full-featured platform that provides online—and often mobile—access to their complete cloud environment from the provider. This includes multiple geographies, accounts, business units, and resource types, all in a single pane of glass. As the cloud matures, users will likely clamor for this functionality and not all providers are prepared to meet these customer needs.

With its strong overall performance, Cloudnexus has earned Frost & Sullivan's 2015 Competitive Strategy Innovation and Leadership Award.

Significance of Competitive Strategy Innovation and Leadership

Any successful approach to achieving top-line growth must (1) take into account what competitors are, and are not, doing; (2) meet customer demand with a comprehensive, value-driven product or service portfolio; and (3) establish a brand that resonates deeply with customers and stands apart from other providers. Companies must succeed at these three things—brand, demand, and positioning—to achieve best-practice levels in competitive strategy.



Understanding Competitive Strategy Innovation and Leadership

As discussed above, driving demand, brand strength, and competitive differentiation 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 strategy innovation and customer impact.

Key Benchmarking Criteria

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

Strategy Innovation

- Criterion 1: Strategy Effectiveness
- Criterion 2: Strategy Execution
- Criterion 3: Competitive Differentiation
- Criterion 4: Executive Team Alignment
- Criterion 5: Stakeholder Integration

Customer Impact

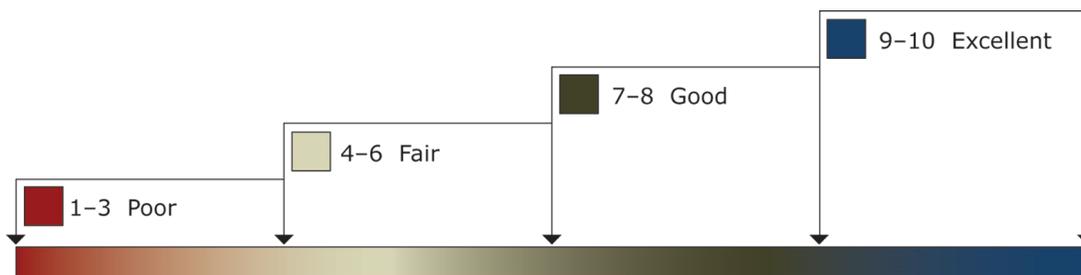
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

Best Practice Award Analysis for Cloudnexus

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 Strategy Innovation and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria 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 players as Competitor 1 and Competitor 2.

DECISION SUPPORT SCORECARD FOR COMPETITIVE STRATEGY INNOVATION AND LEADERSHIP AWARD

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
Competitive Strategy Innovation and Leadership	Strategy Innovation	Customer Impact	Average Rating
Cloudnexa	9	10	9.5
Competitor 2	6	6	6
Competitor 3	4	5	4.5

Strategy Innovation

Criterion 1: Strategy Effectiveness

Requirement: Strategy effectively balances short term performance needs with long-term aspirations and vision for the company

Criterion 2: Strategy Execution

Requirement: Adoption of best-in-class processes to support the efficient and consistent implementation of business strategy

Criterion 3: Competitive Differentiation

Requirement: Unique competitive advantages with regard to solution or product are clearly articulated and well accepted within the industry

Criterion 4: Executive Team Alignment

Requirement: The executive team is aligned on the organization’s mission, vision, strategy and execution

Criterion 5: Stakeholder Integration

Requirement: Strategy reflects the needs or circumstances of all industry stakeholders, including competitors, customers, investors, and employees

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 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

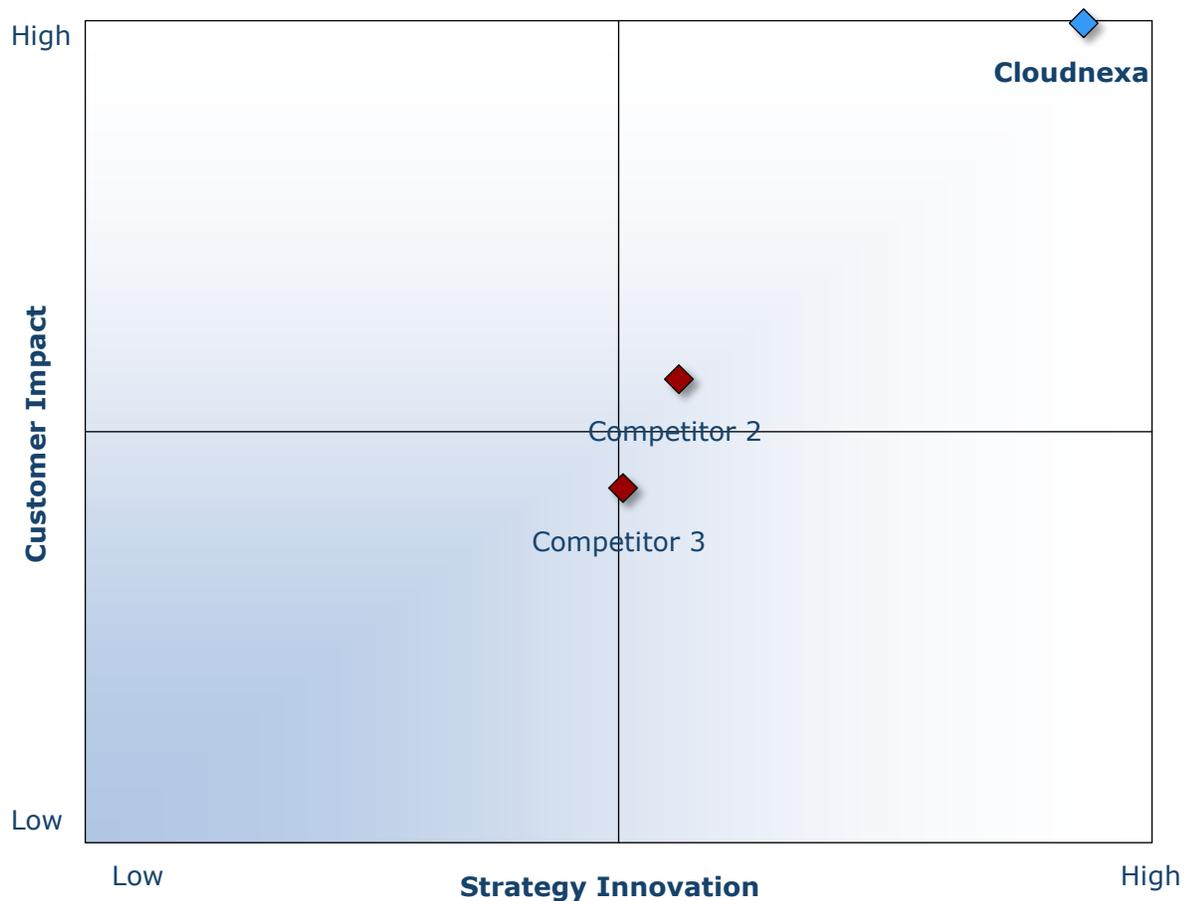
Criterion 5: Brand Equity

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

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts can 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.

DECISION SUPPORT MATRIX FOR COMPETITIVE STRATEGY INNOVATION AND LEADERSHIP AWARD



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 players and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



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

Frost & Sullivan Awards 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice 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	<ul style="list-style-type: none"> • 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	<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-practice 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-practice award recipient	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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 may 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 future strategic planning 	Widespread awareness of recipient's award status among investors, media personnel, and employees

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 almost 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 31 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.