EMA Radar™ for Application-Aware Network Performance Management Q3 2010 Summary

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Table of Contents

Executive Summary

Monitoring network performance is an essential practice in today's IT operations environments, as a means of assuring the network's critical role in supporting the served organization is being adequately fulfilled – not just in terms of availability, but also in terms of efficiency and effectiveness. As IP networks themselves become increasingly stable and reliable, operational focus has turned to developing a better, more discrete understanding of how the services and applications crossing the network are performing, and the level of quality which IT end users, customers, and partners are experiencing in accessing and utilizing them. This Enterprise Management Associates (EMA) Radar™ Report reviews 18 (eighteen) providers of Application-Aware Network Performance Management (ANPM) solutions and compares their ability to deliver basic and advanced application awareness across a range network and application technologies.

Introduction and Methodology

In the development of this Radar Report, EMA engaged eighteen top providers of ANPM solutions in a detailed analysis of the scope and capabilities of their offerings. The solution providers represent a rich cross-section of the IT management tools landscape, ranging from small to very large, from pure software to appliance-only, and from point products to extensive multi-component/multi-function suites. ANPM solution providers covered in the report are: Apparent Networks, ASG, CA Technologies, Compuware, Dorado Software, ExtraHop Networks, Visual Network Systems, InfoVista, Lancope, ManageEngine, NetScout Systems, Network Instruments, OPNET Technologies, Plixer International, Quest Software, SevOne, SolarWinds, and WildPackets.

An extensive questionnaire was developed and presented to solution providers for their input, covering details regarding architecture, integration, functionality, deployment, administration, cost, and vendor strength. EMA supplemented responses with dialog, product demonstrations, and reviews to ensure that each solution was represented fully, honestly, and fairly. EMA also interviewed over twenty end-user customers of the solutions being reviewed – in some cases more than one per solution provider – in order to validate vendor claims. The degree to which customers were readily provided and available for dialog was one of the many indicators used for validating ANPM solutions.

Finally, and importantly, EMA leveraged ongoing industry dialogs and extensive existing knowledge of the ANPM solution space to evaluate, consider, and validate each vendor's strengths and limitations in a manner that is focused on providing balanced, consistent insights across all vendors and solutions.

EMA has produced a report specially targeted at presenting and explaining Radar Reports in general: *How to Use the EMA Radar Report*, EMA, April 2010. The goal is to use a combined approach for quantitatively and qualitatively evaluating providers of solutions in a particular IT management functional area and presenting their relative differences in a clear, graphical format. Also included is a detailed discussion of individual criteria and how each participating solution provider rated versus those criteria.

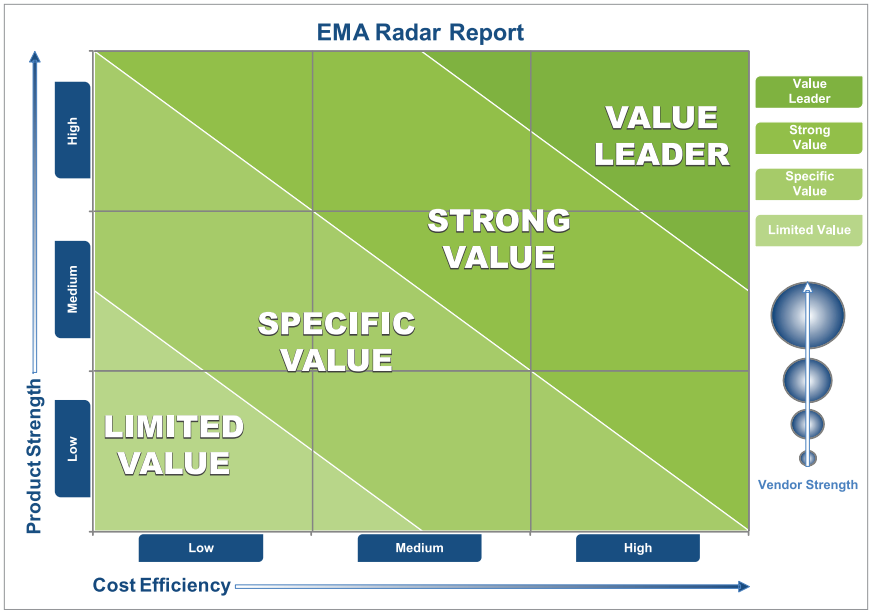


Figure 1: The EMA Radar is optimized to show how vendor solutions cluster in terms of two primary axes: Vendor Strength (architecture, integration, functionality) and Cost Efficiency (ease of administration, deployment, support & services, costs advantage)

Quoting from *How to Use the EMA Radar Report,* "No analysis of this type can tell you which vendor is best for you. The data collected for an EMA Radar Report can certainly be used to make that determination, but it must be applied to the specifics of your current environment, level of maturity, and goals and priorities. Since the authors of any given Radar Report do not have your unique specifics, the Radar Report can only be a starting place and a guideline. It can inform you of the market and short-cut your process to developing a short list."

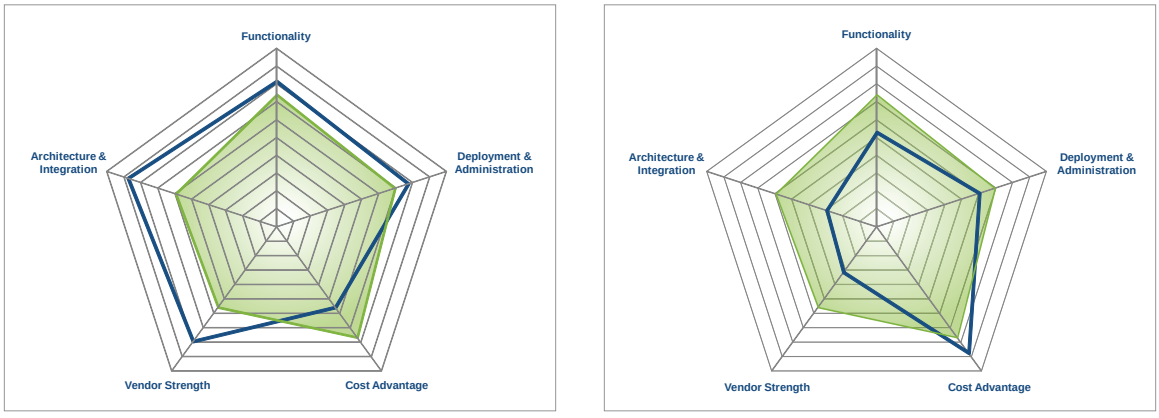


Figure 2: Radars for each vendor solution are included in the full report and show a five-axis contrast between the average profile and the vendor in question.

Application Awareness in Network Performance Management

Network management is considered by many to be a well-developed, mature discipline, with roots extending back to the first computing networks. Network performance management is a relatively newer phenomenon, though it too has been around for a considerable period of time. The latest comer to the game is application awareness built into and on top of network performance management. As IT operations teams make the transition from tactical firefighting to strategic, proactive assurance, one of the most important unifying and enabling angles has been widespread awareness of the need to understand IT user experience. And what IT users experience is not the network – they experience the applications and services that the network delivers. Consequently, building awareness of applications and services and how they are traversing the network has arguably become one of the most important focal points for expanding network operations practices today.

Starting with the advent of RMON over 20 years ago, early network management technologists recognized that application and service information is available from the network perspective, if you know where and how to look for it. And while RMON itself is no longer a primary nor broadly used foundation, the idea of putting the health and operation of the network in context with the payloads being delivered has become an indispensable aspect of responsible management practices.

Today's application-aware network performance management (ANPM) solutions are many and varied, some of them are delivered by independent software vendors, some of the technology is contributed by network equipment vendors, and some of the solutions are part of large software vendors' offerings of multipart integrated management suites. The techniques being used to deliver application awareness are similarly varied, though essentially clustered around four key mechanisms:

1. Packet inspection – This technique is perhaps the most comprehensive, and delivers application visibility by looking into packet headers as well as deeper packet contents in order to recognize and monitor application and service use by user, allow detailed application transaction analysis, support detailed and definitive troubleshooting, and enable reconstructive/forensic study. Packet inspection can deliver visibility up and down the stack, across network and application layers and can be used to calculate response times and latencies – the heart of end-user experience measurement.

2. Flow records – These are transaction records issued by network infrastructure elements, and provide information regarding who is using the network, what applications and services are being used, and how well those applications or services have been delivered. The most typical industry example of flow records is NetFlow from Cisco, but there are many other essentially similar variants, such as JFlow, NetStream, cflow, IPFIX (an industry standard) and the statistically sampled sFlow. Flow records provide extensive traffic intelligence, but cannot be used alone for detailed application analysis, determination of response times, or recognition of errors.

3. Passive and Synthetic agents – Passive agents are software elements installed on either end client systems or servers which observe and report traffic statistics including response times. Synthetic agents generate test traffic in a variety of patterns to assess both availability and performance of specific applications or services and characterize various aspects of a simulated transaction or user experience. IP SLA (a Cisco device feature) is commonly used as a type of synthetic agent, which can take a range of test measurements between Cisco infrastructure devices and end-test targets.

4. Log file analysis – Valuable application-oriented activity records can be found in syslog and similar data files which capture activities and events from various viewpoints within the network-connected infrastructure. Log files are not typically considered a primary source of ANPM metrics; however, they can provide an importantly complementary set of data points for monitoring and troubleshooting when used in conjunction with one or more of the other three types.

ANPM solutions utilize one or more of these data source types by collecting application-aware performance data and delivering the following major categories of functionality:

1. Application discovery, recognition, and monitoring – this is the primary area that differentiates ANPM from simpler NPM solutions – the ability to discern individual applications and services from broader measures of traffic volume and utilization.
2. Troubleshooting and analysis – most ANPM solutions are purchased and deployed for the purposes of delivering troubleshooting and deep, often "expert" analysis capabilities to accelerate incident response times and restoration of services.
3. Capacity planning – detailed insights into how the network is being used and what (and who) is driving traffic growth are available from ANPM solutions and are fast becoming essential information for best practices in network engineering and planning
4. Collaborative reports and dashboards – the ANPM field of vision is where the business meets technology and represents a means for understanding how well the applications and services upon which the organization depends are performing. But none of that value can be fully realized without effective methods for sharing insights and intelligence, both across domain silos within IT as well as with served constituencies such as end users, customers, and partners.

In order to be included in this EMA Radar Report, ANPM solution providers needed to offer all four of the major functionality categories listed above and must have direct support within their own (internally-developed) products for at least one of the three primary ANPM data source types – packets, flow records, or agents.

Criteria

In all EMA Radar Reports, EMA evaluates solutions based on five key areas: *Deployment and Administration, Cost Advantage, Architecture and Integration, Functionality* and *Vendor Strength*. The last category, perhaps the only one that's not self-explanatory, is focused on the market and industry presence, vision, and financial stability of the vendor. In each of the evaluation areas, EMA created a "superset" of capabilities spanning the known solutions in the marketplace, added questions about new and emerging areas (e.g., virtualization and cloud), and balanced the result with standard comparators used across all EMA Radar Report projects. The evaluation model used for this ANPM Radar Report is presented as Figure 3. Following are details on the evaluation areas and the specific scope and rating priorities used within each.

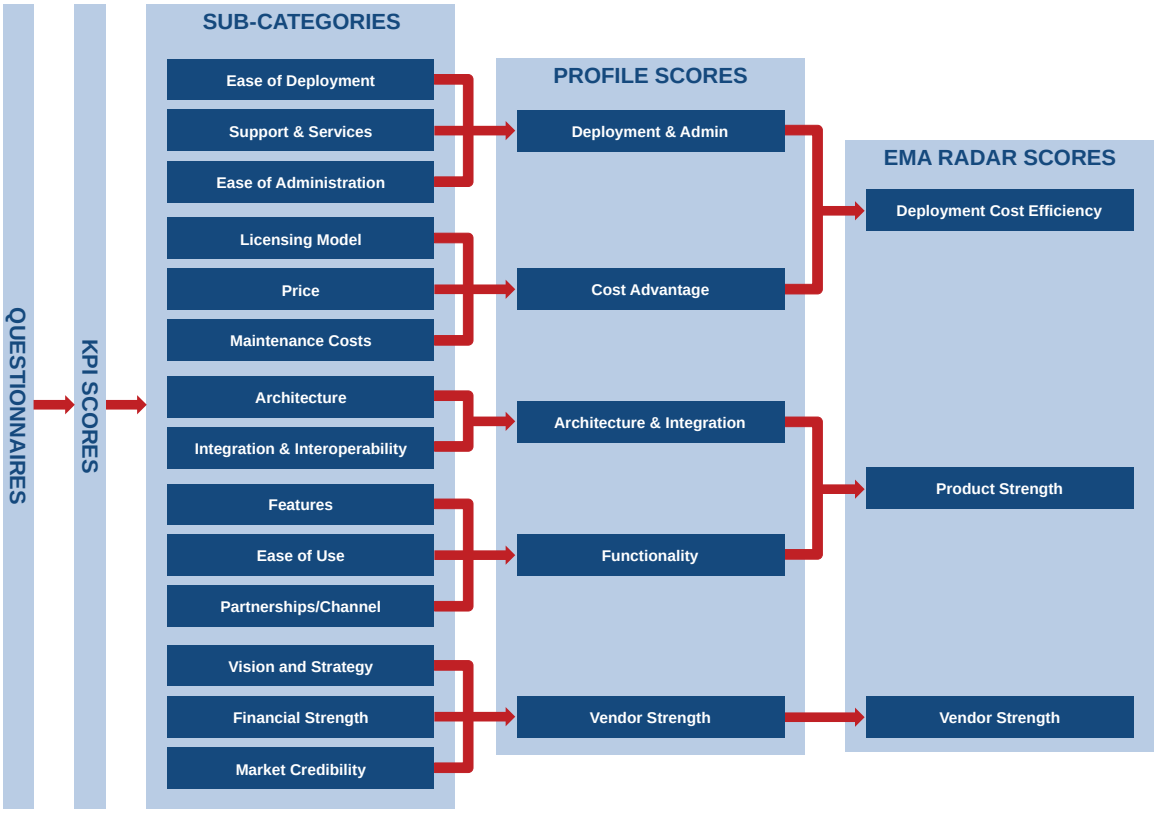


Figure 3. Assessment model for Application-Aware Network Performance Management

Cost Efficiency

The first set of measures conducted within the EMA Radar Report framework and one of the two major axes of the Radar distribution diagram is Cost Efficiency, which consists of two major sections – Deployment & Administration and Cost Advantage. Each of these, and how they have been applied for assessing ANPM solutions, is described below.

Deployment & Administration

Deploying and administering an ANPM solution is the point of embarkation for the ANPM journey. In this category, we assessed several important areas:

- **Ease of Deployment –** This includes a number of measures meant to indicate how easy or difficult it is to put a particular ANPM solution into the production environment and begin to draw value from it for operational monitoring purposes. As such, this section addressed three areas:
  - *Implementation Cost* – Specific questions assessed time to receive initial reports, time to achieve complete functionality, and the percentage of the solution cost which is typically required for professional deployment services. Also included in this part of the assessment were questions regarding product deployments models – software vs. hardware vs. virtual appliances (or other) for ANPM central servers as well as for distributed ANPM instrumentation/collectors, plus how complete, or "out of the box" the solution is as delivered by the ANPM supplier. Highest ratings were given for rapid deployment and low or zero need for professional services, as well as for those offering flexibility and multiple options in product deployment models.

- *Staff Training* – In this section, the breadth of training options as well as the length of time expected for administrators to reach basic and advanced proficiency were determined, as well as whether or not the ANPM technology provider offered formal certification programs. Top marks were given to those with broad training options, short learning curves, and existing certification opportunities.
- *Disruption Minimization* – Many ANPM solutions can be deployed without any disruption to the managed environment, but others will require downtime for software installation, network tapping, or other deployment steps. Some require scheduled network downtime, or a maintenance window in production operations. This measure assesses the impact each ANPM solution has on the monitored network during deployment, with preference given to those with lesser impact.

- **Support and Services –** An important part of any management solution is the facilities made available by the technology supplier to support initial rollout as well as ongoing production use. In this section, we evaluated several specific areas of interest for supporting and servicing ANPM solutions:
  - *Customer Support* – This area investigated the variety of customer support offerings, guaranteed response times for highest support levels, methods for reporting product issues, and diagnostic information gathered at the point of failure. Also of interest was the presence of organized user community groups, which can act as a powerful supplemental resource to technology users. Highest ratings in this category were given to those with broad support offerings, fast responsiveness, and a well-developed and well-organized user community.
  - *Professional Services* – Within the range of ANPM offerings included in this study, some require significant professional services to fully deploy, while others require virtually none. In this category, we gave the highest rankings to solutions that could be deployed with minimal efforts or cost.
  - *Code Fixes* – Every system goes through patches, minor upgrades, and major upgrades as functionality is added and problems are fixed. Generally, these are all good changes, but there is a balance to be struck here – too much change creates chaos and stability risks in the management tools. In this section, we asked about the frequency of minor and major incremental software updates, and gave the highest rankings to solutions that were updated regularly, but not overly frequently.
- **Ease of Administration –** Once an ANPM solution has been deployed, focus turns towards ongoing configuration and administration, to ensure that the system remains fully functional and that the maximum value can be realized. In this section, we investigated several categories that helped to illuminate each ANPM solution's administration facilities:
  - *Ease of Admin* – Here, the intent was to assess how much time was required by operations staff to keep the ANPM solution up and running, with preferential ranking granted to those requiring the lightest touch.
  - *Update Process* – When it comes time to apply a patch or upgrade to an ANPM solution, two questions are predominant. What will be the impact to my continuity of monitoring? And how can large numbers of distributed instrumentation devices be updated efficiently? Highest scores in this section were given to solutions that had a means to transparently apply updates without interrupting coverage and to those that included (where applicable) features for *en masse* updates of remote instrumentation.

- *Testing/Migration Facility* – While not universally the case, many IT shops require pre-deployment shake-downs of new or upgraded technologies (including management tools) before rolling them out into the production environment. Our interest here was to determine whether or not ANPM solution providers gave discounts for test labs and short-term migration project use of their products. Highest scores were given to those who charged lesser licensing fees (or none at all) for such uses.
- *Automation of Management* – Increasingly, managed environments are becoming more complex, as are the tools that are used to manage them. EMA is a strong advocate for automation whenever and wherever possible within management tools, technologies, and practices as a means to extend human operator resources, keep up with highly dynamic IT infrastructures, and reduce error introduction rates. As it applies to ANPM, we asked if solutions included features and capabilities such as self-configuration, automatic adjustments to changing managed environment conditions, autopopulation/autodiscovery, and wizards and templates for configuring data source devices (such as a GUI front end as an alternative to command-line configuration to setup up NetFlow or IP SLA). The more automated features, the higher the ANPM solution was rated.

Cost Advantage

All management tools carry costs of one type or another. The most obvious and commonly recognized are the licensing costs associated with the tools themselves. But importantly, there are other aspects of total cost of ownership (TCO) for ANPM tools that are also relevant, particularly the cost of maintenance (support and upgrades) for the technology. And it must be noted that solutions that carry a high licensing cost may still provide a compelling return on investment by favorably assuring operations.

For this portion of our analysis, EMA focused on the typical licensing costs for an initial deployment, what types of licensing models are offered, maintenance fees for the highest levels of support services, and whether or not ANPM technologies providers offered creative delivery mechanisms such as SaaS (software as a service) or via MSPs (managed service providers). These latter two approaches have shown the greatest traction within smaller shops, but even large organizations are finding them advantageous as a means to support regional facilities and/or supplement core network operations staff during off hours.

Highest marks in this section were given to those providers offering lower-cost entry points, lower maintenance fees, and SaaS or MSP delivery models. The only preferences assigned to licensing model (i.e., processor-based, appliance-based, agent-based, usage-based) was to those ANPM providers who offered multiple options over a single (and hence less flexible) approach.

Product Strength

The second major axis of evaluation within the EMA Radar Report framework is that of Product Strength. This category is comprised of two focus areas – Architecture & Integration and Functionality. Details on how these areas have been addressed specifically for ANPM are provided below.

Architecture & Integration

The first of the two major product strength categories is Architecture & Integration portion, and is meant to gauge the underlying enabling technology base upon which the bulk of ANPM functionality is delivered. Following are the areas of analysis used in this research report for evaluating the alternatives and methods for architecting an ANPM solution:

- **Design –** As mentioned earlier, there are several basic approaches to monitoring application performance from the network perspective. One of the key measures in this study was ascertaining each solution's scope and inclusion of the various types of ANPM data sources. Beyond monitoring, management solutions can also provide similar levels of visibility while also including active control functions. An ANPM solution may be broad or narrow in this regard, and may be designed to be more or less real-time. It may also go beyond application-specific metrics to collect other collateral and supportive data. Top scores in the category were given to those solutions that included true real-time capabilities, those solutions that included an ability to take or invoke closed-loop corrective actions, for breadth of ANPM data sources supported (packet inspection, NetFlow/xFlow, agents, IP SLA and log files), and for integral support of additional supplemental/complementary data sources.
- **Scalability –** The basic need for any ANPM solution to support collection and storage of large volumes of performance metrics goes without saying; however, solution scope in terms of throughput capacity as well as distributed coverage are important points for consideration. In terms of scalability, top scores were given to those systems capable of both high volume processing of ANPM data as well as architectural support for very large scale, distributed monitoring deployments.
- **Breadth of Environments and Applications Supported –** While some managed environments are well standardized and are thus relatively "simple," most have a mix of networking technologies in play. The same can typically be said regarding the number and type of applications that are present and are expected to be visible via an ANPM solution. In general, the broader the better, so that barriers to coverage and visibility are minimized. It is also important to recognize that there exists a mainstream of network and application technologies that must, at minimum, be supported. Weightings in these categories were tilted towards support for mainstream network and application types but also for diversity and breadth, along with the ability to accommodate custom/non-published application types.
- **Integration and Interoperability –** While some ANPM solutions will come tightly integrated into a multifunction, multi-capacity suite of management tools, most will not live in a homogeneous environment. Consequently, it is very important that ANPM solutions be able to integrate and interoperate with products and technologies from other vendors that fulfill other complementary functions. Of particular interest within this research were integrations between ANPM solutions and event/fault management systems (most commonly those that are on the big screens in a Network Operation Center), service management systems (most commonly help desk applications but also service operations or BSM dashboards), and CMDB/CMS solutions (present either as part of an ITSM/ITIL initiative or in conjunction with a higher level BSM solution). Also of interest was whether or not open APIs are available for integration with any other IT or non-IT applications and functions. Highest ratings in this category were granted to those solutions that had proven (certified, fielded, supported) integrations within each of the three complementary functional areas as well as ample API options for custom integration.

Functionality

Functional completeness and scope is the second major angle of analysis applied in this research in determining relative product strength. Following are the primary Functionality criteria that were used as part of this research and analysis:

- **Application Discovery/Recognition –** If a network performance management solution is to be application aware, one of the most important aspects of that solution is the way in which it identifies those applications. Further, to the more general assessment of application types supported (as discussed above within the architecture and integration section), this inquiry focused more specifically on the mechanisms for identifying applications and for how new, unknown application flows are presented to a system operator. Important for rating well in this category was a range of choices and options, so that the many different, subtle and unique identifiers of various types of applications can be accommodated.
- **Metrics and Measurement –** Performance management systems generally gather a wide range and large volume of performance metrics. Presented in this category were those considered most important for characterizing application activity from the network perspective, including volume, response times, errors, and quality by application/user/server. Also included was a special question about support for VoIP quality measurements, since there are specific and discrete metrics that are applied to voice traffic, such as MOS and R-Factor. Since the focus of this research is application awareness, traditional device-centric health measures were not included. As with many other categories, scoring in this area was based on the breadth of metrics and measurements supported.
- **Capacity Planning –** One of the primary uses of application-aware data is reality-based planning, whereby capacity monitoring and changes to network capacity can become informed decisions made in the full context of understanding how the network resources are being used. In particular, recognizing the influence of individual or groups of applications and the contributions they make is paramount for reducing both infrastructure cost as well as operational risk. In this measure, we looked for support of long-range trending reports, including trend extrapolation as well as the ability to conduct "what-if" analysis based on current performance conditions.
- **Alerting/Alarming –** When things go wrong, and performance problems are recognized, it is essential that operations personnel be notified of the situation as quickly as possible. It is also important not to set off lights and sirens too often – today's interconnected and interdependent IT infrastructures generate enough event and alert chatter even before performance monitoring alarms are added into the mix. Basic performance alerts and alarms need to recognize short-term and long-term patterns, as well as include as much information as possible to assist subsequent investigation and diagnosis. Additionally, a growing number of ANPM solutions are including behavioral modeling to recognize unusual patterns of observed activity, either in the volume of transactions/flows/sessions or the in the total traffic bit volumes. Some ANPM systems are also able to identify special/unique performance issue scenarios, such as microbursting in multicast traffic – a transient, sub-second phenomenon that requires true real-time, packet-based monitoring technologies. Scoring here tilted in favor of those solutions that provide the broadest set of alerting and alarming supports.
- **Troubleshooting –** Whether reacting to a performance problem reported by the help desk or proactively investigating a growing issue that has not yet been recognized by the end-user community, rapid and efficient troubleshooting is perhaps one of the most important objectives of network management and operations. For ANPM solutions, combining various types/sources of

data, accelerating workflows, and intuitively presenting data best facilitate troubleshooting. Further, troubleshooting is most effective if analysis can include current and historical data, including forensic reconstruction, and there are special analysis features included for discrete application-layer technologies such as Rich Internet Applications, multicast, industry-specific application or control protocols, VoIP/video, WLAN, or custom/in-house developed applications. Highest rankings in the category were granted for efficiency features, support for forensic/reconstructive analysis, and the presence of special analysis capabilities.

- **Security and User Management –** Since an ANPM solution will have visibility into detailed user activity as well as potentially proprietary or private information, it must provide some form of access controls. And while most ANPM solutions are not deployed for the purpose of security management per se, ANPM solutions are often able to recognize potential security events. Some solutions have been designed or optimized for this parallel purpose while others have not. Scoring in this category was prioritized towards solutions that offer strong credentialing, discrete controls to data and functions, and those systems designed to play either a complementary or direct role in security operations.
- **Analytics/Advanced Analysis –** The leading edge of management technologies apply automated, intelligent analysis to the data collected by monitoring systems. Such capabilities can deliver better early recognition of performance problems, support for complex infrastructures, and/or accommodation of recent technology innovations such as virtualized computing and cloud services. This research included an assessment of the degree to which each ANPM provider has developed and included a range of advanced functions, from dynamic thresholding and baseline shift/drift recognition to data mining, and route analytics. Also of interest was specific support for correlating ANPM data in the service of monitoring intra-datacenter n-tier architectures, shared/balanced network links, outsourced/cloud services, and mixed physical/virtual computing environments.
- **Active controls –** Beyond monitoring and analysis, some ANPM solutions will deliver the ability to take direct actions in response to existing or pending/potential performance problems. The extent of active controls can be quite broad, ranging from intrinsic direct capabilities to scripting to triggering actions within other management tools. This is an emerging area of functionality for most ANPM solution providers, unless they provide ANPM functionality as an adjunct to a core optimization value (as in the case of many WAN optimization controller vendors) or if they have change and configuration management capabilities elsewhere in their management tools product lines. Highest scores here were given if direct controls were available; however, none of the participants enjoyed this capability and thus the most common responses related either to other products offered by the vendor, integration with third-party control systems, or simple script launching capabilities.
- **Ease of Use –** The final area of assessment that contributes to the overall Product Strength score is Ease of Use, which encompasses the ability of the ANPM solution to be used directly as a means for collaboration between the various groups with IT and with IT's service constituencies. Along these lines, we looked for the ability to group ANPM monitoring and reporting in various ways, such as by business/organization construct, geography, address range, application type, or technology type. We also looked for integrated support for business/service prioritization, application dependency recognition/mapping, and understanding of logical and/or physical topologies. Next, we assessed each ANPM solution's support for a broad mix of visualization and reporting functions, such as consoles, portlets/mash-ups, and scheduled and ad-hoc reports.

Finally, we asked whether or not each ANPM solution had the means to specifically support consoles, portals, and/or reports for a broad range of discrete roles, spanning IT (network, systems, applications, storage, service desk, service management, etc.) as well as non-IT (executive, financial, Line of Business) functions. As with so many of the other areas of this study, the highest scores were granted to solutions which supported the broadest range of options and optimizations, as well as the ability for operators to tune the system to their specific needs without the direct involvement of the ANPM solution provider.

Vendor Strength

The third and final major axis of analysis and comparison within the EMA Radar Report framework is that of Vendor Strength. This section is a combination of measures that are meant to gauge not only the financial viability of an ANPM solution provider, but also the quality of their vision, strategy, go-to-market, and market voice. As such, following are specific categories used to assess vendor strength and how they have been applied to ANPM solutions:

- **Vision** – The purpose of testing vision in the ANPM sector is to understand each solution provider's viewpoint of who they are, what value they provide, and where they fit into the broader ecosystem of management tools and practices. First, an understanding of the role that ANPM plays and the value that ANPM solutions can and should deliver in terms of IT operational efficiency and operator effectiveness was assessed. Next, each provider's understanding and appreciation of integrated IT service management (ITSM) and the broader move of IT towards service-oriented operational models was gauged. Finally, specific attention was paid to how each supplier articulated their relationship and role in supporting and empowering their customers.
- **Strategy –** While vision is tuned towards a broad understanding of role and purpose, strategy is meant to assess how each provider plans to achieve their vision. Consequently, this measure was specifically attuned to functional roadmaps and plans to evolve ANPM technology and total solution scope/capability over time.
- **Financial Strength –** An important aspect of selecting an ANPM solution provider is to understand their viability as well as their ability and commitment to ongoing development of their offering. Key measures used in this category included organizational size and revenues (specific to ANPM as well as overall), access to capital, profitability, and investment rate in R&D.
- **Partnerships/Channel –** While ANPM solution providers must develop and deliver key technology as a basis of their approaches, an important complementary element to their effectiveness and presence takes the form of business alliances. Strength of partnerships was evaluated by measures such as number/breadth/depth of technology alliances and breadth of channel relationships. More is generally (though not always) better in both cases, and credit was given based on the length of time partnerships were active in the field.
- **Market Credibility –** Beyond simple presence and visibility in the marketplace, which is more of a measure of marketing budget than anything else, the ability of an ANPM solution provider to achieve and maintain credibility is important when assessing their overall strength. In evaluating credibility, EMA examined a number of measures, including how focused the provider is on the ANPM space, whether or not it is an exclusive focus or a supplemental position supporting an adjacent core competence, how often they compete directly with other ANPM solutions providers, and which other credible industry voices are backing them up.

EMA Radar Map for Application Aware Network Performance Management

The ANPM Radar Bubble chart shown in Figure 4 shows how the 18 solutions studied in this report ranked in comparison to each other, in terms of Cost Efficiency (x axis) and Product Strength (y axis). The size of the "bubble" indicates relative measures of Vendor Strength.

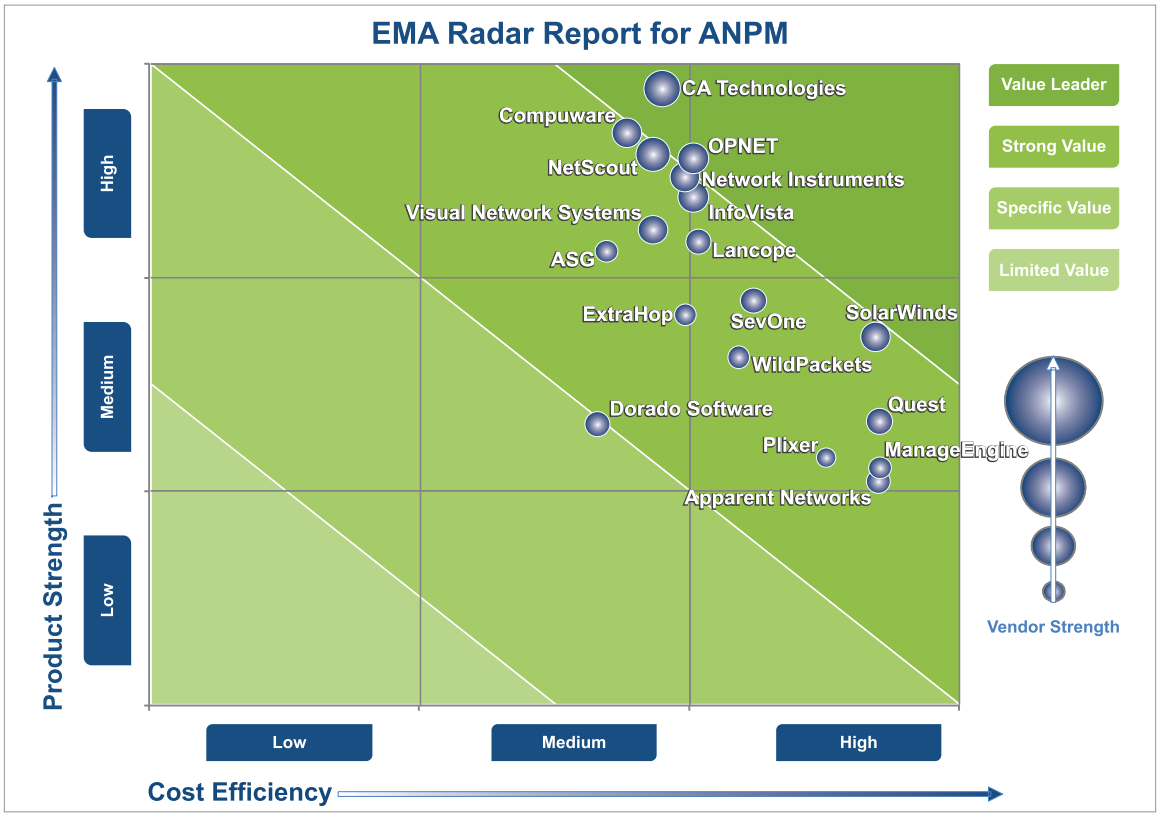


Figure 4. Application-aware Network Performance Management Radar

As can be seen in Figure 4, the vast majority of solutions reviewed in this report have clustered in the "Strong Value" band. The lack of results in the lower left "Limited Value" category reflects that the EMA Radar process itself, and the rigor of the survey and dialogue, has resulted in significant "self-selection." This means that solution providers not focused on the ANPM space or who don't consider themselves competitive declined to participate. One example of this is WAN optimization vendors – several of whom offer ANPM-like functionality, such as user and application activity reporting and even troubleshooting/diagnostics, but exactly none of whom chose to participate in this study. Those who did participate can thus be considered the "ANPM elite" – those providers who have invested significant development into delivering complete solutions that deliver substantial value to network operations and engineering practitioners.

General Findings

As expected, more fully featured solutions and those designed for meeting the scaling requirements of large enterprises and service providers tend to be more expensive. Customization also plays a role here – the more flexible a solution is, and the more individual products that have to be installed in order to reach full ANPM functionality, the more services are typically required, and hence the greater the deployment costs, time span, and complexity.

Similar cost/deployment variances exist based on the types of ANPM data sources employed. Packet-based solutions require establishing access to packet streams by one of many methods, versus those that rely more heavily on soft sources such as NetFlow. Many solutions are delivered as appliances, often easing deployment by avoiding the need to procure computing platforms. An increasing number of vendors allow parts of their solution to be deployed on or as virtual machines (VMs) or accessed from the cloud as SaaS offerings, both of which can also lower ongoing administrative overhead, although they do introduce additional elements of risk to performance and availability. Solutions that focus on passive monitoring agents (there are very few in this study) can also exact a relatively higher price both in deployment as well as ongoing administration than appliance and collector approaches. Within this study, EMA found a wide range of options and many creative approaches to leveraging the advantages while reducing the disadvantages of each of these approaches.

Also worthy of note is the diversity of the solutions covered here. While not all of the "big four" high-end platform providers are represented, the ones that didn't participate self-selected out because they do not all have strong ANPM stories – some choosing to partner and others choosing not to make it a strategic priority. What is perhaps most impressive is the number of suppliers who did participate, and participated well, and who can make a real difference in the face of the rapidly changing and (often) far-flung infrastructures. This speaks to the demand that exists for ANPM solutions, both in terms of better capabilities within ANPM products (answered by expansion, integration, enhancement, and acquisitions) as well as at price points that fit the budgets of smaller organizations that need the same types of visibility and control that ANPM has been delivering to large enterprises for years.

ANPM and MSPs

As this study progressed, it became apparent that almost every one (all but one, in fact) of the ANPM solution provider contributors has had their products deployed by MSPs, or Management Services Providers. MSPs by this definition are organizations that offer remote, third-party management of infrastructure, sometimes as part of a broader IT outsourcing strategy, and other times simply as off-hours support or better cost/quality than is available via direct employees. MSP support was assessed primarily as a question in conjunction with product licensing, to determine if enterprises could in fact gain access to ANPM visibility through a services organization, on a subscription basis, rather than buying the products outright. And it does seem that indeed this is a fairly common option – eleven of the eighteen participants indicated that their entire ANPM solution was available via MSPs. A few have specifically targeted MSPs with specific product packaging and go-to-market, such as Quest's PacketTrap MSP product, and Apparent Network's PathView and AppCritical. CA Technologies also addresses this sector, albeit primarily via their Nimsoft division, which was not studied here.

But there is another flavor of MSP that is worth recognizing – Managed Service Providers. These are CSPs who offer Managed Services, more commonly known within the enterprise community as WAN services, which include SLAs and increasingly feature direct customer-specific, on-demand views and reports with application awareness and performance metrics. In order to make this work, ANPM

systems typically must be deployed as a discrete solution installation for each customer, or be designed as a shared system with rigorous partitioning and controls (known as multitenant support) to prevent data mixing or improper access. Prime examples of this type of MSP deployment are Visual Network Systems, Compuware and InfoVista, the latter prominently featuring their Vista360 customer portal.

Distribution of Results

The results shown in Figure 4 illustrate a wide distribution of product strengths versus cost efficiencies; however, there are two clusters of note. First, several solutions are positioned in the upper-middle, sharing similarly high levels of product strength along with medium-high cost efficiencies – this group is mostly comprised of enterprise-class, packet-centric solutions. Second, there is another, looser grouping that has higher cost efficiencies but low-medium product strengths – this group is mostly comprised of solutions that have added ANPM (typically NetFlow and IP SLA) to a broader network performance management platform and/or have been focused on delivering solutions to mid-tier organizations.

Value Leaders

ANPM value leaders are comprised of only two providers who have assembled the best combinations of product strength and cost efficiency

CA Technologies – Long an ANPM provider via elements within the eHealth product line, CA Technologies make substantial strides into this sector via integration of product technologies received by means of acquiring NetQoS in late 2009. This move substantially improved the completeness of CA's ANPM solution, which covers all four ANPM data source types. Combined with its ability to integrate into CA's formidable infrastructure service assurance and service management offerings, CA Technologies ranked highest overall in terms of relative product strength.

OPNET Technologies – By means of steady expansion through internal product development as well as selective technology acquisitions, OPNET has pulled together its strengths in network and application monitoring to deliver one of the strongest product suites for ANPM reviewed in this report. Combined with a strong customer support model and flexible, efficient implementation options (including a small but growing number of managed services customers where OPNET deploys and operates their own solution), OPNET was able to move to higher levels of cost efficiency and thus into the value leader category.

Strong Value

The majority of the solutions reviewed in this study fall into the strong value category, most with strong rankings in both product strength and cost efficiency. Solutions are listed below in order of their product strength ratings, beginning with the highest.

Compuware – Perhaps best known for end-to-end application performance management, Compuware has assembled a well-stocked set of ANPM capabilities within its Vantage solution that leverages all four ANPM data source types and complements them with a broad set of options for monitoring user experience, including response times from inside and outside the firewall. The result is that Compuware Vantage ranked second-strongest overall in terms of relative product strength, and just barely falls outside of the EMA Value Leader category.

NetScout Systems – Clearly the overall market share leader in ANPM, NetScout Systems' nGenius Service Assurance Solution is the standard against which all other ANPM solutions are judged. Long a provider of deep and detailed application awareness via packet-based instrumentation, NetScout has continued to expand its solution, including recent releases of instrumentation for virtualized environments (nGenius Virtual Agent) and remote facilities (nGenius Integrated Agent), as well as next-gen service dashboards (nGenius Service Delivery Manager). NetScout ranked as one of the top solutions in terms of product strength while also rating well in terms of cost efficiency, ultimately falling just barely outside of the value leader category.

Network Instruments – While everyone was looking the other way, Network Instruments, long known for their popular Observer Console, has added enterprise-class reporting, NetFlow, and IP SLA support to their existing strengths in packet-based capture, storage, and analysis. The Network Instruments GigaStor has been a perennial leader in terms of streaming packet-capture capacity, but the broader solution achieved a top five ranking in relative product strength, and coupled with relatively high cost efficiency, also landed just outside of the value leader category.

InfoVista – Most know InfoVista for the strength of their VistaInsight infrastructure performance solutions, especially those designed for the communications service provider sector. But with a recent acquisition of packet-inspection technologies, now available as 5View Applications and 5View NetFlow, the release of a leading-edge, award-winning Web 2.0 collaborative dashboard in Vista360, as well as long-standing and continued success in the enterprise sector, InfoVista is a worthy provider of ANPM solutions. The InfoVista solution ranked high in terms of relative product strength and above average in relative cost efficiency.

Visual Network Systems – The newest organization represented in this study, Visual Network Systems, offers the Visual Performance Management (VPM) system, which was formerly part of the Fluke Networks portfolio. The solution delivers a combination of packet-based monitoring and strong NetFlow credentials. Further fueled by recently-added deep application analysis capabilities via the Application Performance Appliance, the VPM solution ranked well above average in terms of product strength while also exhibiting high-medium cost efficiency.

Lancope – The StealthWatch solution from Lancope was built from the beginning with application-awareness in mind. Originally launched as a security monitoring solution based on collecting NetFlow records, the solution has been expanded to leverage the same data sources for dual purposes – security and network performance management – with great success for large scale performance data generation, collection, analysis, and presentation. With their recent introduction of packet-based monitoring and continued expansion of a formidable set of advanced analytics features, the solution achieved a high product strength ranking while also offering high cost efficiency.

ASG – As one of the strongest BSM solution providers in this study, ASG's BSP (Business Service Portfolio) solution spans all IT domains with elegance. As part of that broader solution, ASG has assembled a remarkably strong lineup of ANPM tools and capabilities, particularly in the areas of Web application discovery, recognition, and analysis. The ASG solution is one of the few in this study that fully supports all four ANPM data source types, and finished well up the rankings in terms of overall product strength.

SevOne – Another relatively new entrant, SevOne offers the Performance Appliance Solution (PAS), which is loaded with ANPM capabilities. The system is built on a unique, peer-to-peer architecture that delivers best in class scale for flow record collection (as well as SNMP polling) plus lightning-fast viewing and reporting enterprise-wide. The solution also boasts one of the most open approaches to gathering and incorporating third party data sources of any reviewed in this study. Based on scalability

and simplicity of deploying the appliance-based PAS, SevOne ranked high in the cost efficiency category and high-medium in terms of product strength.

ExtraHop – Designed by founders with a strong technology heritage in application-layer switching, ExtraHop has constructed one of the easiest-to-deploy packet-based ANPM offerings – one that equally serves the specific needs of both network and application operations support teams from the same platform. The solution ranked particularly well for advanced analysis as well as its ability to support multiple roles in the organization.

SolarWinds – If there was a market momentum recognition in this EMA Radar Report, it would go to SolarWinds, one of the fastest-growing management tools companies in recent history. The SolarWinds Orion suite of products was originally launched to address network infrastructure performance management for medium-large organizations, and has been extended with ANPM capabilities based on NetFlow, IP SLA, active agents, and log file analysis, resulting in a high-medium product strength rating. The solution is also very affordable, and with acknowledgement of the strength of their customer community and support program ranked near the top in cost efficiency, narrowly missing out on Value Leader credentials.

WildPackets – The number one focus of WildPackets and the packet-based OmniPeek solution is troubleshooting, but the solution also supports flow record data sources as well as a solid enterprise-class reporting platform in WatchPoint. The company has also been directly in the mix of pushing the leading edge of packet recorder technology, recently announcing the industry's first certified 10+ Gb platform, WildPackets TimeLine. Overall, the solution scored well in terms of product strength and scored the highest cost efficiency rating among packet-centric solutions.

Quest Software – In June 2010, Quest Software announced the release of Foglight NMS, a network and application performance product with ANPM features, which first reached the market in 2008 as PacketTrap Perspective. Focused on extreme deployment simplicity and decorated with high-end advanced features, Foglight NMS is also priced very aggressively, resulting in one of the highest overall cost efficiency ratings in this study. As an integral part of Quest's broader application performance management portfolio, this solution is one that is likely to see additional expansion in the near future.

Plixer International - The future of NetFlow is bright, in no small part due to the full-time focus of Plixer and its Scrutinizer solution. Plixer originally set out to build a NetFlow solution that could bring application awareness to the masses, improving visibility for network teams of all sizes, but along the way they have gone further than anyone else in terms of their sophistication of leveraging NetFlow for all it can be and do. As a relative newcomer, Plixer is still building its feature set, but has already landed in the medium product strength category while boasting a well-above-average cost efficiency.

ManageEngine – As a part of ManageEngine's OpManager solution, ANPM functionality is tightly integrated into a multi-function, multi-domain solution. Ideal for small to mid-sized organizations, but also capable of supporting larger environments, the ManageEngine solution is built primarily around collection and analysis of flow records with supplemental support for Cisco IP SLA, log files, and packet-based monitoring specific of VoIP. A Web-focused subset of the solution is also available via a remotely hosted SaaS offering site, 24x7.com.

Apparent Networks – Something of an outlier in this study, Apparent Networks delivers application-sensitive path monitoring and analysis, primarily as a means for recognizing network-layer issues and understanding how they affect application delivery. Their recent move to a cloud-based SaaS delivery model for the PathView product offering, coupled with a highly innovative, new on-site instrumentation package, has resulted in a very highly cost-efficient solution with some interesting future potential for product growth.

Specific Value

Solutions in this category typically exhibit strong results in one of the two dimensions, product strength or cost efficiency, or moderate scores in both. These solutions are typically best fit for use within specific managed environments or in certain defined operational scenarios.

Dorado Software – Dorado's Redcell solution is a multi-function, multi-domain integrated approach centered on Redcell OpCenter, which can be extended to include tightly integrated ANPM functionality via Redcell Traffic Flow Analyzer and Redcell Advanced Monitor modules. These modules bring NetFlow and IP SLA measurements into the system, where they can be leveraged together with a broad range of other management data for integrated reporting, presentation, workflows, and even automated corrective actions. In terms of ANPM-specific capabilities, the solution ranked as medium in overall product strength, ahead of many other NetFlow-centric solutions. From a cost efficiency perspective, the solution also ranked in the medium category, and ended up high in the Specific Value category. EMA believes that Dorado's ANPM capabilities are worthy of serious consideration when an investment is being made or has been made in the full Redcell solution.

Other Solutions Providers of Interest

While eighteen of the most well-known providers of ANPM solutions were covered in this report, there are other management product vendors who offer some or even substantial degrees of ANPM functionality. Some of those vendors were invited to contribute to this research and declined (including three of the big four management software vendors), others started the process and did not complete it (including Ipswitch and Entuity), and still others simply did not respond to the invitation (such as Niksun, Riverbed/Cascade, and BlueCoat). What most all of those non-participants have in common is a primary focus other than ANPM, and the ANPM functionality they make available is meant to augment a broader or adjacent offering rather than compete as a standalone solution. In the author's opinion, the only significant ANPM player not represented here who is focused primarily on this functional area is Niksun. The rest of the participants herein should be considered a sufficient representative cross-section to act as a basis for building an ANPM short list.

Exceptional Characteristics

There are several participants in this research report that are worthy of special recognition for specific areas of strength and/or unique areas of innovation. Following are the award winners for the Application Aware Network Performance Management 2010 Radar Report:

Best Integrated Service Assurance Strategy – CA Technologies

By fitting their ANPM products, most notably those added to the portfolio by virtue of the acquisition of NetQoS, into a broader integrated portfolio of service management solutions, CA Technologies is best positioned to deliver true service visibility and assurance. In particular, CA's core service modeling and open interfaces for integrating entity, relationship, and status data into a common service assurance dashboard is head and shoulders beyond others covered in this research report.

Best Joint Security/Network Management Solution – Lancope StealthWatch

Many ANPM solutions over the years have had their roots in the technologically adjacent network security monitoring market, but few have been successful in the long term in straddling the two spaces. Lancope is a clear exception to this rule, and validates the premise that multiple operational objectives can be achieved by leveraging the power of ANPM data, particularly when coupled with strong role-specific analytics.

Best Use of Cloud Delivery – Apparent Networks PathView

With an innovative new microAppliance for remote ANPM instrumentation and a purely cloud-hosted central management platform, Apparent Networks has fully embraced the cloud model of product delivery. Apparent's PathView solution is ideal for smaller organizations, particular those who are deploying VoIP or UC, that want access to enterprise-class tools such as detailed path analysis and troubleshooting, but have limited budgets and human resources to throw around. The solution also scales up to larger shops quite gracefully, in part due to the elasticity of the cloud product delivery model.

Most Innovative Architecture – SevOne Performance Appliance Solution

One of the major challenges facing any ANPM solution is scalability for data collection, data analysis, and data presentation/reporting. SevOne employs a distributed, peer-to-peer approach to address this challenge, and the results are impressive. At the time of this writing, the SevOne Performance Appliance Solution represents the highest capacity solution available for NetFlow/xFlow. But just as important are SevOne's high capacity, highly parallelized SNMP polling engine, and the solution's ability to generate reports against massive data stores at Google-esque speeds.

Best Joint Application Performance/Network Solution – ExtraHop Networks

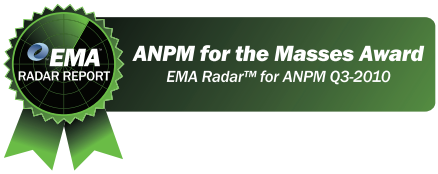
In most IT shops of any size, the network and application support teams are separated by a gulf of mistrust and alternative/competing priorities. And yet, both teams commonly rely on detailed packet-level transaction and session analysis to characterize and troubleshoot performance issues, often buying separate tools (NPM versus APM) that share a lot of common technology. With a heritage in application-aware switching, ExtraHop was founded to bridge the gap between the application and network teams. The ExtraHop solution focuses on detailed application-aware visibility and analysis and is so rich in this regard that as often as not, the solution is purchased by the application support team rather than the network team. The result is a solution that serves both audiences very well, with the ultimate benefit of greater efficiency and collaboration across the silos.

Best BSM Platform Integration – ASG

A significant strategic objective in a growing number of IT organizations is the implementation and achievement of effective Business Service Management (BSM). While this strategy almost always originates outside of and reaches far beyond the networking team, ASG has recognized that ANPM data can be extremely useful in bringing business service, process, and user experience performance intelligence to BSM. Consequently, ASG's ANPM solution, while highly capable in its own right, shines most brightly as a tightly integrated supporting component underpinning ASG's broader BSM solutions.

Market Driver Award – NetScout Systems

Without NetScout Systems, the ANPM sector might never have been born. NetScout was an early pioneer in the RMON sector and stands today as the largest independent network management vendor based on the strength of their packet-based application flow monitoring solutions, which are now deep into their third decade of heritage. Having acquired the Sniffer brand when they acquired Network General in 2007, NetScout's suite of solutions is the standard against which all others are judged in some way or another. In fact, many of the other ANPM solutions were created directly or indirectly (whether or not their providers will openly admit it) to ride NetScout's wake and emulate their success. Finally, this award is not given solely in recognition of NetScout's historical role – NetScout continues to be a market leader for ANPM solutions in terms of capacity, capability, and most recently, service awareness.



ANPM for the Masses Award – Plixer

Of all the participating ANPM vendors, none is more intensely focused on the deep technical details (and potential) of NetFlow than Plixer. In fact, Plixer has staked its entire strategy around delivering the very best NetFlow ANPM solution, bar none. And along the way, Plixer has built their Scrutinizer solution to be fast-deploying, easy to use, and with a low entry price – a recipe for success for medium-sized IT shops where resources are few yet the needs are great. And if you are a pop fan, you'll love their techno-geek rap videos.

Cost Efficiency Bonus Award – SolarWinds

SolarWinds offers a well-featured, modular ANPM product suite that is among the best in terms of cost-effectiveness, ease of use, and speed of deployment. But one element that truly sets SolarWinds apart from other ANPM vendors is the tremendous value available to their customers by virtue of "thwack," their customer community user group. SolarWinds not only supports this organization, it actively promotes the development and sharing of product extensions among the nearly 50,000 thwack members, in effect turning them into a huge, extended research and support body at no extra cost to SolarWinds customers.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that specializes in going "beyond the surface" to provide deep insight across the full spectrum of IT management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise IT professionals and IT vendors at www.enterprisemanagement.com or follow EMA on Twitter.

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