

Time for Interoperability Among ADS Vendors

Net Forecasts – Peter J. Sevcik

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The Application Delivery System (ADS) is the front line in giving users the performance they need from their IT systems. The term is based on the following logic: The underlying network infrastructure is a given that you can't change (once you've implemented basic QOS). However, even with QOS-enabled switching and routing, enterprises need help getting applications delivered to users in a timely manner.

The new delivery mechanism, ADS, is an intermediary layer operating between users and servers. ADS solutions work as a system that changes how applications operate over a network, incorporating either a pair of devices, or a device matched with a browser on the user's desktop.

So what's the difference between QOS and ADS? Basically, QOS modifies networks while ADS modifies applications. But QOS must be deployed everywhere that contention may occur (essentially at every hop), while ADS needs to be in just two key places (in front of the endpoints). Since ADS is located at two network hops, many ADS vendors add QOS in order to help complete the QOS coverage.

I coauthored a "Pocket Guide To Application Delivery Systems" that appears in this issue on pp. 28-33. The purpose of the article is to clear the air regarding the many confusing marketing terms for all of the specific techniques and approaches to ADS. I recommend reading the article as background to this column, which explores the need to open the technology for growth.

ADS Market In Transition

ADS is now a well-established market of about \$2 billion in sales this year. In fact, it has already had a wave of mergers and buyouts that indicate the transition from emerging market to maturing market. The question I intend to explore in this column is the long-term prospects for this market.

Today about 30 companies supply competing ADS solutions. However, the distinction among the vendors is slowly eroding, and market share is starting to consolidate among a few large players. One would think that this is well on its way to becoming a very large market dominated by a few players. But I think there is a significant roadblock in the way to that rosy future.

Information and network technologies grow in value exponentially as the number of potentially communicating endpoints (enterprises or users) grows--this is Metcalfe's Law. Market size grows in relation to that value, albeit not exponentially, as the price per connection falls over time. The engine of growth is communicating pairs of endpoints.

The Need For ADS Interoperability

The value of Metcalfe's Law is only achieved if the endpoints can actually communicate with each other. Therefore, the industry needs a good number of locations connected with some ADS solution--but the solutions must be able to communicate with each other in order for us to realize the exponential value.

Figure 1 shows the general placement of the two major ADS solutions within an enterprise architecture. All ADS solutions operate by converting inefficient applications into WAN-optimized applications running between two endpoints. The ADS does this optimization function so that the endpoints themselves do not have to be bothered with the improvements.

The top pair in Figure 1 shows a centralized ADS device (aka, asymmetrical or application front-end, etc.) paired with a standard browser. The second solution is two distributed ADS devices (aka, WAN optimization, acceleration, etc.), which are shown communicating over Path 2. Since each approach is optimal for different issues, many enterprises are installing all the elements shown in Figure 1, rather than choosing between the two configurations.

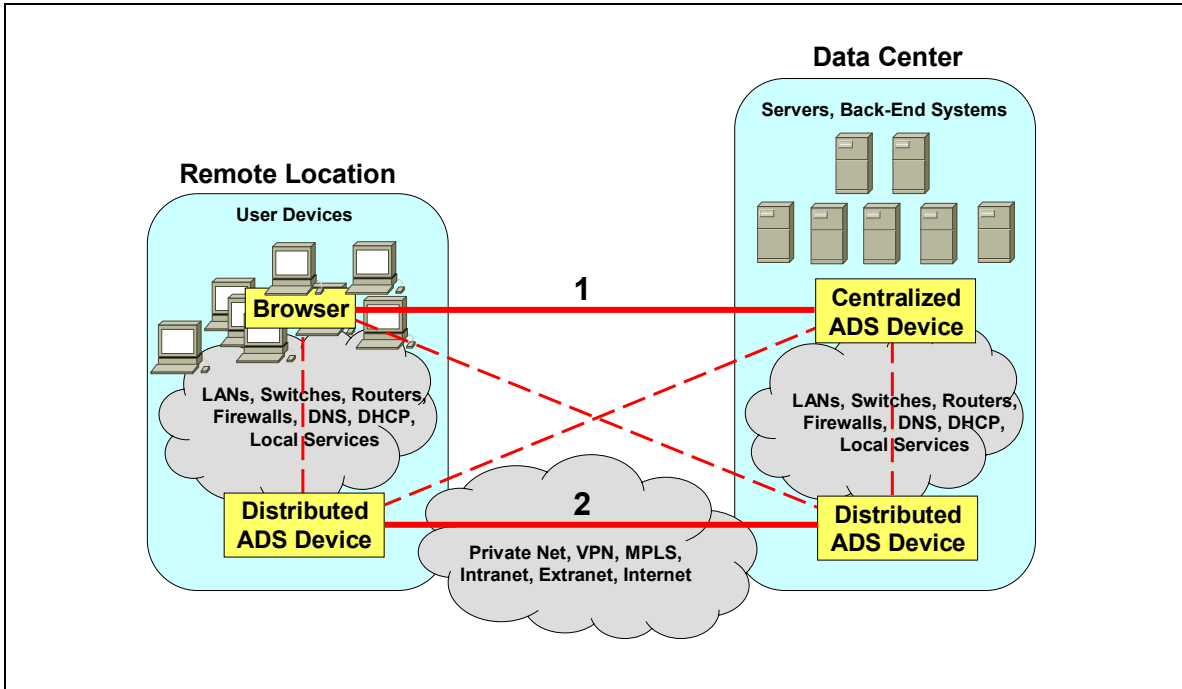


Figure 1 – Centralized and Distributed Ads in the Network

There are other architectural variations to the configurations shown in Figure 1. The user with a browser may access the central ADS path over the Internet instead of a private WAN, which means this user need not be at an enterprise remote location. Also, ADSs may be implemented as an overlay (i.e., third-party-provided) service on the Internet. However, for the purposes of this column, we will focus on enterprise uses of ADS as shown in Figure 1.

Path 1 is inherently interoperable, since it leverages standards that exist in the browser, such as HTTP, HTML, XML and Java. However, there are still many subtle changes to various implementations of these standards in both the server and browser to make implementations of the centralized ADS very complex.

Some centralized ADS vendors make a big point of the ability of their sophisticated transformational features to work properly with a wide range of servers and browsers. The good news is that this class of vendors is clearly trying to make standards work. Their goal is to make sure that any user with any browser can properly receive the enhanced application. Enterprises can therefore, employ central ADS solutions from multiple vendors.

Path 2 is currently made up of about dozen closed systems. Each vendor may mention some standard-based techniques, but they invariably “extend” such techniques with their own “improvements.” For example, most distributed ADS devices add TCP optimization between their devices in order to improve throughput.

One specific technique within this group is to improve the acknowledgement algorithm within TCP so that the transmitter does not need to go all the way back to the last contiguous sequence number of acknowledged data if some is lost. There is a very good standard, RFCs 1072 and 1818, TCP Selective Acknowledgment (SACK) that defines how to do this. Many ADS vendors even mention that they provide a SACK-based solution just to let you think that they are standards-conscious. However, their “improvements” also make them incompatible with any other vendor’s implementations of ADS or of SACK.

Then there are the many ADS techniques that are clearly labeled as proprietary and under patent protection. The bottom line is that Path 2 is not interoperable with any other ADS solution. In fact, if an enterprise were to buy distributed ADS

solutions from two vendors, then the work performed by four incompatible Path 2 engines would probably bring communications to a halt.

Why Should Enterprises Care?

I have seen many successful implementations of distributed ADS solutions. However, enterprises are now transitioning from wanting these solutions as tactical fix to a point problem, to wanting a comprehensive strategic solution for all inter-office communications.

The stakes are higher in many respects. ADS solutions are now coming in a wider variety of sizes, to scale from a SOHO to a large office. The ability to easily manage thousands of remote devices is critical. Furthermore, simple management of complex performance policies is important for both the ADS operator and senior IT management. The CIO must be able to clearly explain to the board of directors why one application is working better than another.

In addition, overall system availability is now very important. ADS devices operate in the data path. If they fail, communications fails. In the early days of ADS, if the device failed, it had simple relays that shorted out the box so it became a simple wire. But today, failing over to a wire is no longer a viable availability answer. ADS is now a mission critical part of the system. The “wire” is being replaced by automatic roll-over to redundant subsystems.

Finally and above all, there is the clear need for interoperability among the solutions.

Distributed ADS vendors are addressing these new requirements--except for interoperability. Most enterprises hate the idea that they must make a strategic bet on one vendor. That vendor may not be the best or may not even exist in a few years. Furthermore, the enterprise is certain to merge with or acquire other companies that will have their own ADS devices already deployed. Why should an enterprise be forced to remove hundreds of perfectly fine ADS boxes and redeploy new ones just to make the applications work properly? This is an issue that will appear on Day 1 of the acquisition. The routers in the company they acquired can all communicate with the existing network, but the ADS devices can't!

In the last six months I have witnessed three Fortune 500 companies hold off global deployment of ADS until this issue is resolved.

Inhibiting Market Size

I hosted an interesting panel in May at the Interop Application Performance Day where the marketing managers for ADS products at Juniper Networks, Packeteer, Riverbed Technology, and SilverPeak Systems shared the stage. I asked the group, “When will you start to develop a way towards multi-vendor interoperability?” The group gleefully replied in unison, “Never!”

They are still fighting tooth and nail for market share among each other. This is a short-sighted view. The ADS market will stall unless it can become a strategic element of the IT architecture at large enterprises. Furthermore, it will not see the next stage of growth that would come from applying Metcalfe's Law. Capturing 100 percent of a market falling to zero is a lose-lose scenario.

This phenomenon has occurred before. I remember enterprises having the same hesitation about buying routers. In fact, the eventual market leader, Cisco was hurting itself by resisting the Open Shortest Path First (OSPF) standard. The market really took off after Cisco adopted OSPF.

Many venues, both old and new, could serve to develop open standards among the ADS vendors. The vendors can still keep non-standard extensions to some features in the form of protocol negotiations. For example, devices can default to standard SACK while negotiating the extensions only among like devices.

Vendors must acknowledge that the basis of competition changes over time. Technology prowess gives way to management tools and global execution.

The Big Win-Win

Figure 1 shows that there are two primary paths for interoperability, along with four secondary paths, shown as dashed lines. The dashed lines of inter-device communication or signaling would unleash the full potential of ADS solutions. These could enable a host of improvements in application delivery and overall performance as server-oriented and network-based views could be exchanged.

Interoperability will open the gates to new services and ensure that the ADS market continues to grow to its full potential. Enterprises and vendors will both benefit. Who will see the light and start down the path of long-term success?

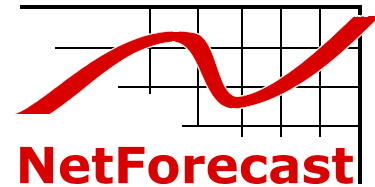
Companies Mentioned

Juniper Networks (www.juniper.net)
Packeteer (www.packeteer.com)
Riverbed Technology (www.riverbed.com)
Silver Peak Systems (www.silver-peak.com)

Peter Sevcik is president of NetForecast and is a leading authority on Internet traffic, performance and technology. Peter has contributed to the design of more than 100 networks, including the Internet, and holds the patent on application response-time prediction. He can be reached at peter@netforecast.com.

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