

Application Front Ends

OR

The Product Formally Known as the
SSL - Layer 4-7 - SLB

An overview of the marketplace

A look at the trends

A perspective of the future

APM
advisors

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Introduction

APM Advisors (APMA) practice is focused on the Application Performance Management marketplace. This paper was prepared in response to questions about the competitive trends outlined in the APM Paper recently published by APM Advisors.

While many of the more established consulting and analyst firms have covered the marketplace, there is always room for a fresh perspective and if nothing else, that's what APMA is all about. With that in mind, the reader should also understand that this document is not sponsored and therefore carries no baggage or bias.

Classification

In the APM Paper, APMA categorized two groups of solutions in respect to managing connections between users and applications; Server Cluster and Ingress / Egress. Some of the interesting findings developed in the trends of the industry drew the conclusion that there was a considerable amount of consolidation of functionality already occurring and much more to come.

In the upcoming 2nd Edition of the APM Paper, the new category for Server Cluster solutions will be Application Front Ends. Now, we (APMA) understand that there will be many new classifications of these solutions coming from virtually all of the other consulting and analyst firms, but this one stands out for many reasons.

A Little History

The foundation for the classification is what the Application Performance Management thrust is all about. Essentially the APM effort is the re-invention of the wheel, which was first built and delivered by IBM through the SNA (System Network Architecture). Within a SNA system it was quite possible to manage performance and align business with the IT environment.

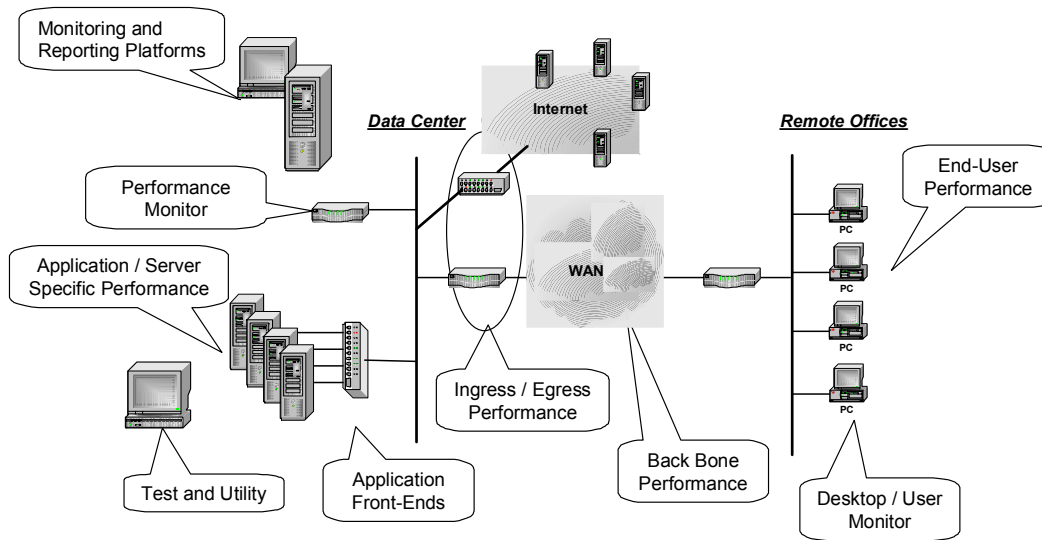
So as the industry has been chipping away at the wheel, the inevitable reintroduction of the Front End Processor (FEP) is underway. The role of the FEP (as it sounds) was to 'front end' the application processor, so that it could utilize its resources for processing transactions.

Therefore we selected Application Front Ends (AFE) because it fits and it's clear. So bear with us in the stance for now and we'll see how the industry evolves from a classification perspective.

Marketplace

The AFE is but one of many elements in an APM Solution. APMA has established the foundation that any APM Solution needs to include three functional elements to provide a system solution. These include *information, resolution and control* of these the AFE's are all about *control* since they take an active roll in optimizing application performance.

The following diagram overviews the rest of the solution categories and demonstrates the scope of solutions available to any IT organization. The consolidation of functionality in the AFE space is only the beginning. The same pressures are beginning to develop at the Ingress / Egress point of the network, especially at the Intranet / Internet gateway location.



Application Performance Management Solution Categories

The original players in the AFE space were the Server Load Balancer (SLB) products, which are quickly becoming aged technologies. The major players include **Cisco**, **Foundry** and **F5**. The name of the game here was initially simple switching, which evolved to provide many flavors of intelligent switching.

Speeds - Feeds - Functionality

An interesting issue with marketplaces is that a vendor and an end-user will have to very different perspectives on the 'state of the industry'. Vendors have developed leading edge functionality and performance capabilities, but users do quite a bit of comfort and convenience purchasing. Therefore the current leader of the pack (**F5**) has enjoyed a long run in the market as outlined in the following Press Release.

F5 Networks Holds No. 1 Position in the SSL Security Market for Eleven Consecutive Quarters

F5 continues to be the worldwide market share leader of mission-critical SSL hardware acceleration solutions, according to Infonetics Research

SEATTLE, DECEMBER 3, 2003--**F5 Networks, Inc.** (NASDAQ: FFIV), the leading provider of secure Application Traffic Management products, today announced that it has maintained its worldwide market share lead in SSL (Secure Sockets Layer) acceleration products, in the Layer 4-7 Switch/Load Balancer with SSL category. The results of the recent Infonetics Research¹ survey reveal that **F5** leads the market with 50% market share based on revenue. **F5** has maintained its top ranking in this category for 11 consecutive quarters. SSL is the industry standard for securing enterprise Web applications.

"Our demand-side research shows a clear trend toward feature consolidation between security and traffic management products, and the strong growth forecast in 2003 for the Layer 4-7 switch/load balancer with SSL category is driven by this trend," said Neil Osipuk, Directing Analyst at Infonetics Research. "**F5** leveraged their prime

real estate in the network and was the first switch vendor to integrate SSL acceleration into their products. This strategy has clearly been well received by the market and is reflected in the market share results."

The Infonetics report also cites that large enterprises have driven the majority of sales for the layer 4-7 switch/load balancer category in 2003, and are expected to drive the majority of sales from 2004 to 2006.

"We merit our No. 1 ranking to the exceptional value that **F5** products deliver to enterprise customers," said Dan Matte, Vice-President of Product Management and Marketing at **F5** Networks. "Our BIG-IP products provide a natural consolidation point for SSL acceleration, a capability we have delivered for years now. We will continue to leverage **F5**'s leadership in SSL security and are committed to providing innovative solutions that address end-to-end application security with a high return on investment."

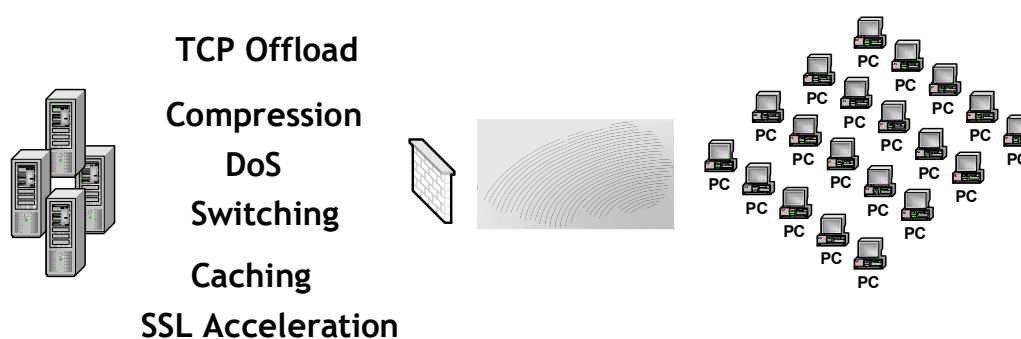
¹ Source: Infonetics Research, Inc., SSL and intelligent traffic delivery product worldwide market share, 3Q03; November 2003.

As pointed out in this Press Release, the consolidation of SSL in the SLB is something **F5** has been delivering for years. Essentially, as SSL became a useful means of securing transactions, **F5**'s SLB wasn't able to provide any value added load balancing without being able to terminate the SSL and take a look inside the packets. So, they come up with a method of adding an SSL card into the system to un-encrypt the packets for load balancing processing.

Marketplace Trend

As covered in the APM Paper and represented by many new product entries in the AFE space, the breadth of user-application connectivity services are now being delivered in one packaged product. This consolidation of functionality, significantly improves performance and the 'cost-to-value' for the customer.

The following diagram outlines the basic set of functional services required by customers for servicing remote or Internet based access to application services. Until the introduction of products from companies such as **Array**, **NetScaler** and **Redline Networks**, most of these functions were provided in separate boxes or some functional mix.



Overall, it makes little to no sense to purchase different products from different vendors to achieve these core functional services. The newer architectures provide a significant amount of throughput capacity regardless of how many functions are operating simultaneously. This architectural approach will be a significant challenge to the incumbent players in the marketplace, since their foundation was built on switching rather than connection processing.

In order to provide not only encryption, but also TCP connection management and security (DoS, etc), the newer generation of AFE's need to terminate or proxy the connections at a high enough level to provide the upper level services efficiently. Therefore folks like **F5**, **Cisco** and **Foundry** are significantly challenged as users become aware of the breadth of functionality and high performance available from folks like **Array**, **NetScaler** and **Redline Networks**.

Competitive Profile

As outlined in the APM Paper and as being played out in customer accounts, the offloading of servers, optimization of bandwidth and improving response times is driving demand for having the entire list of functions outline above. This trend takes a while to impact the incumbent players, but the leader (**F5**) must be feeling some of the pressure. They recently struck a deal with **Fineground Networks**, where the **F5** field can bring in **Fineground** to cover the functional shortcomings of the **F5** offering*.

**an APMA opinion*

To get a better perspective of the competitive landscape, APMA put together the following table of key features and performance metrics for servicing the marketplace. One will notice that the table has a few functional holes and anyone who looks under the covers, knows that just saying 'yes' doesn't answer all the important questions. However, the table clearly demonstrates that the current market share leader (**F5**) is way behind the functional and performance curve.

NOTE: All the numbers were provided by the vendors and APMA did not attempt to verify them or request the method in which they were developed. Any and all numbers should be verified by prospective buyers under conditions representing the specific production environment the product is being evaluated for.

	F5	NetScaler	Radware	Redline	Array	Fineground
SSL Volume	200Mbps	760Mbps	Separate SSL Processor	750Mbps	750Mbps	35Mbps
Simultaneous SSL Connections	8000	5.5M			32000	
New SSL Connections per second		8720		1600	5000	
Inspection Depth	16Kb	24Kb				
Content Processing				Full HTTP Stream		100 bytes HTML payload
TCP Optimization	Yes	Yes	Yes	Yes	Yes	Yes
Compression	No	555Mbps	Yes	750Mbps	Yes	Yes
Authentication	Yes	Yes	Yes	Yes	Yes	No
Dynamic / Static Cache	No	Yes	Yes	No	Yes	Yes
DoS	Yes	Yes	Yes	Yes	Yes	No
Server Load Balancing	Yes	Yes	Yes	Yes	Yes	No
Link Load Balancing	Yes (add on)	Yes	Yes	Yes	No	No
Unique Feature 1	Universal Inspection Engine	L7 switching - 245kbps http req/sec	Intrusion prevention	Adaptive Content Processing	Speedstack architecture	Delta Optimization

	F5	NetScaler	Radware	Redline	Array	Fineground
Unique Feature 2	Cookie Persistence	SSL VPNs	Local & global triangulation	Active-Active and Active-N scalability and failover	Webwall™	FlashForward Object Acceleration
Unique Feature 3	IControl	TCP Buffering	Firewall, IDS & VPN load balancing	Compression Policy Engine	N+1 Clustering	Just-In-Time Object Acceleration
Unique Feature 4	OneConnect	Surge Protection	QoS	FIPS 140-2 Level 3 compliance	Non-HTTP SSL Acceleration	Smart Redirect
Unique Feature 5	Packet Velocity Engine	Sure Connect	Application Security with Security Update service	Request Sentry Security	Memory based Reverse Proxy Caching	

It's also quite clear that **Fineground's** feature set and **F5's** feature sets are complementary. In discussions with several vendors and analyst, the consensus was that **Fineground** is looking to be acquired and therefore has positioned their products and technology to be as complementary to **F5** as possible.

The Competition

The following profile of the competitors of the incumbents is a high level view. As mentioned earlier, there is always a lot of detail in a 'yes' column answer or lots of questions about performance under varied conditions. (This is one reason that APMA will never quote a test result or winner, because each test can be 'cooked' and each evaluation is typically based on relationships and a reviewer's bias. These aren't negative comments, but honest ones and most prospective customers of these solutions aren't going to base their purchase on a test or 'Best Of' award.)

Array Networks has recently refocused on the core issues of managing web application connections and has perhaps one of the more powerful architectures amongst the early competitors. Through the SpeedStack™ architecture, they perform many packet-processing task in parallel to optimize performance.

The challenges for **Array** lie in establishing the company / product in the marketplace, both from a perception and channel perspective. At this stage of the marketplace evolution **Array** can't afford to blink and therefore must be aggressive on the sales and marketing front.

NetScaler is clearly taking the likes of **F5** straight on and not flinching. Through the Request Switching™ architecture **NetScaler** provides a highly intelligent and efficient platform. Beyond the horsepower and functionality, they thought through many of the TCP issues encountered in the real world, which not only offloads servers, but ensures quality session services to connected users.

APMA views **NetScaler** as the company that **F5** has to be the most concerned about once they achieve the visibility they are striving to achieve. The solid customer wins; strong management team and momentum of the company clearly demonstrate a contender.

Radware is more of an incumbent than the start-ups, but worthy of observation. They made the conscious decision to not integrate their SSL acceleration capability within the SLB platform. Their approach is based on platform flexibility, where customers can leverage their investment in the platform and load various services for either functionality or scalability.

The lack of functional integration will limit **Radware's** penetration. While the story / architecture has applicability in many application environments, the larger market opportunities will require an integrated set of AFE functional services.

Redline Networks from the beginning had the vision about what the next generation of AFE was and has been executing toward fulfilling it. While having a powerful next generation SSL SLB platform, they also uniquely provide content level services that extend the availability of web-based applications.

Redline Networks is strong a contender, with a solid list of wins and a clear understanding of how to establish a beachhead and advance from there. Clearly, **Redline Networks** represents not only a threat to **F5's** position but perhaps the best positioned to define the next generation of AFE's.

Platform / Leadership

While the comparison of **F5** with the other players in the SSL SLB space seems to show only a couple of missing elements, they are either very important missing pieces or if you dig into the 'Yes' details the gap is even larger than what is seen on the surface.

To address these shortcomings, **F5's** response to the questionnaire was filled with 'coming in 2004' statements. While all vendors announce their intentions to their customers, it is rare to see public claims made about the future without follow through. As pulled from the **F5** web site, the following is a Press Release they issued about 3 ½ years ago about basically what they were promising for 2002.

NETWORLD + INTEROP, LAS VEGAS, NV, MAY 8, 2001--F5 Networks, Inc. (NASDAQ: FFIV), the leading provider of Internet Traffic and Content Management (iTCM) products, today announced its SSL (secure sockets layer) product roadmap, based on the industry's most scalable architecture. F5's roadmap will extend the company's current line of award-winning SSL acceleration products, allowing customers to scale to an unlimited number of transactions per second (TPS). To continue its leadership in the market, F5's SSL roadmap has definitive plans for ultra high performance SSL acceleration products, exceeding design goals of 10,000 TPS (transactions per second), within nine months. F5's best-practices approach of integrating traffic management with SSL enables customers to scale their SSL processing to unparalleled performance. SSL is the industry standard for securing web applications and continues to be a high priority for most enterprises.

When ask about this release and the statements made, the response from **F5** was "Looks like we got a little ahead of ourselves" So we'll see what comes out next year. From the outside looking in, **F5** decided to through their R&D into dealing with likes of **Cisco** and **Foundry** and decided to wait until there was serious competition for the integrated functionality.

*These feature set and performance developments will also leave **Fineground** in a tough position. If they achieve a boost in revenue and customer awareness through the relationship, it would make sense that **F5** will close that door quickly and attempt to 'up-sell' their customers with the new product.*

It is not unusual for an established company to face competition from new start-ups within their core space. The real issue for F5 customers, analyst and investors is how they will respond.

Customer Wins (Published) 2003

Another indicator of a company's health and progress is gathered from their Press Releases. APMA went to each site and pulled published customer wins that were dated 2003. While obviously, F5 has several customers who made up the \$80+ million in revenue, it is normally the course to demonstrate validation of initiatives, etc... It would seem that with as much hype associated with being the market leader in the SSL Acceleration that at least one customer win would be publicized as a point of validation.

Published customer wins for 2003:

F5 = 0 Redline Networks = 5 NetScaler = 5 Fineground = 5 Radware = 7

The Incumbent Threat

Without a doubt, the incumbent's need to keep an eye on both **NetScaler** and **Redline Networks**. Both companies have the vision, the team and the momentum to threaten the incumbent F5. **Array** has the platform and technology to be a serious threat, but as noted earlier they can't afford to blink.

It all comes down to execution and from APMA's perspective; F5 did an excellent job of establishing and building market share in the SLB marketplace against some very strong competition. The new marketplace requirements for AFE's changes the playing field to such a degree that the commodity of the products is the switching capability and the value is the 'front-end' services. These are complex functional services to deliver and the newer products had the opportunity to design solutions knowing that requirement.

Summary

The AFE marketplace will be played out by the companies mentioned in this paper. While many analysts have whacked **Cisco** for their lack of innovation or even action, they appear to be playing the game like they can. By waiting and watching, they have a big enough wallet to solve a number of problems. F5 as well has recently lined their pockets and has the opportunity to make some aggressive moves.

From APMA's perspective, if F5 follows through with their announced plans of upgrading their existing platform, rather than acquiring a new generation architecture, they will be in a tough position late in '04 and through '05. The grip on the channel will hold off the challengers for a bit, but as **NetScaler** and **Redline Networks** develop presence the channel will loosen up.

In conversations, with sell side analyst covering F5, many have a clear understanding of the level of 'hype' produced by F5 in this marketplace and others are like teenagers in love. APMA wants to be clear that the specific timing of how the next generation of AFE's will impact F5 revenue is unclear, but the erosion has already begun.

It's hard for financial analyst to understand the underlying market issues that are driving customer decisions and the importance of an architectural foundation to deliver those requirements. Since they are responsible to their customers for quarterly results, that is basically all that matters. The long term vision and capabilities of many companies is compromised by short-term results.

What APMA is representing is that, the marketplace that was defined by SLB products is gone and IT organizations are rapidly and openly streamlining their application environments. As they do, the requirements that F5 will be delivering next year will already be dated.

2004 is the year of the AFE and it's up to Cisco, Foundry and F5 to decide their role in the marketplace. No amount of functional extension on their current platforms will deliver solutions that are as comprehensive as the likes of NetScaler and Redline Networks. It's just like putting lipstick on a pig.

There are plenty of 'used to be's' and there always will be. (We know that includes consultants and analyst....)



Legal

We don't hire lawyers if we can avoid it, so let's keep it simple.

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