

ACUITIVE, INC.

*T*aming the Beast: Storage Complexity

Catching Up with 

An Executive White Paper
August 2005

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Background

In the summer of 2004, Acuitive was approached by Alloy Ventures about utilizing our Market Validation Practice to conduct an objective market validation survey for Attune Systems (formerly known as Z-force). As part of the validation effort, Acuitive engaged a number of our senior level storage IT executive contacts to provide feedback on the Attune Systems' value proposition. These one-on-one meetings generally lasted from one to two hours. Since there was no product demonstration available, most of the discussions revolved around a revamped PowerPoint presentation that re-positioned the company from previous marketing messages created by an earlier management team. Detailed analysis was conducted after each meeting.

Approximately nine months later in March of 2005, Acuitive conducted a blind focus group on behalf of Attune Systems. The objective of the effort was to re-confirm the IT customer's pain and assess alternative competitive solutions.

In July 2005, Acuitive had a chance to get an updated positioning brief and a pre-release demonstration of the Attune Systems' beta product. The purpose of this report is to give a brief update on Attune Systems' progress and outlook for the Network File Management (NFM) market. The document is not intended as a detailed competitive analysis nor summary of past engagements.

Complexity is the Beast

Ask any CIO of a Fortune 1000 company what keeps them awake at night and they are likely to respond with a comment about managing the complexity of their rapidly growing infrastructure. Poor performance, lack of visibility, security breaches, vendor lock-in, and lost productivity are all symptoms of a much larger problem... complexity.

Actual infrastructure equipment costs are a relatively small portion of a company's IT budget. Fully burdened IT personnel costs are the largest line item in most CIO's budgets today. Reducing complexity is by far the most leveraged IT activity today and far outweighs the often talked about economic benefit of re-architecting toward commodity hardware.

Storage continues its inexorable march. Studies have shown that it is actually cheaper to save files than it is to throw them away. Managing storage is significantly more expensive than then storage itself. Back-up volume windows routinely approach 24 hours. In the last five years, the simplicity of managing a small number of monolithic UNIX servers with directed attached storage in a data center has given way to the daunting task of managing tens of thousands of "disposable" server blades connected to a fabric of network attached storage from many different vendors. To further complicate matters, cutbacks in IT staffing have reached a critical breaking point. Customer's have shed light on the fact that the average IT shop is managing roughly five times the amount of storage than they were a few years ago often with fifty percent less resources. This disturbing trend is an accident waiting to happen according to one CIO who told us recently... "(storage complexity is....) a formula for disaster in these highly regulated times."

It may be useful to briefly examine how the storage complexity crisis happened. As networked attached storage began to proliferate a number of interesting things happened. The first thing was that customers quickly filled up their silos often without having any context of what information was stored on their volumes and who owned it. NAS vendors gleefully responded by building



new NAS filers only this time they were much higher capacity... and oh yes...much more expensive. After migrating data from an old filer to the new and improved filer, this actually worked for awhile until you needed to migrate again or there was a catastrophic failure in which case the risk exposure was much higher because more data was behind a single, huge NAS head. When customers complained they needed better tools to monitor, optimize utilization, migrate data etc.. the vendors responded by building proprietary sets of tools that (no surprise) only worked with their own platforms and sometimes with only one box at a time. As customers got more sophisticated, they realized that all data was not created equal nor should the devices that hosted their data be consider the same for all applications. As a result, environments started to become more heterogeneous with both high performance NAS from vendors like Network Appliance (NTAP) and EMC and now the exploding mid-range market of Microsoft Windows based filers from vendors like Dell. More vendors...more proprietary tools... more complexity! Each filer in a sense became an isolated island and the islands were growing out of control. Storage administrators also grew concerned that they had no context for what data was stored on the growing number of devices. Surely a company' source code for the next generation chip architecture or an upcoming financial earnings release should not be considered a peer to the latest pirated MP3 music on the same device! The issue has been heightened in board rooms across most public enterprises due to recent regulatory legislation such as Sarbanes-Oxley, Graham Leach Bliley and HIPPA that hold CEO's accountable for their customers' as well as their own financial data.

What is attractive to Acuitive about the NFM market is that we really believe there is an opportunity for a new player to enter the market since the larger entrenched players have too much legacy software and are completely uninterested in working with their competitors. Based on our customer discussions, we believe there is virtually no market risk for NFM. The growing problem of storage complexity must be solved because the impact to the bottom line is simply too large. By no means does this guarantee success for the likes of Acopia, Neopath or Attune but with market risk taken out of the equation it will come down to execution risk.

Taming the Beast

When we first met Attune Systems (back when they were Z-force), before the current management team was in place, much of their messaging was somewhat myopically focused on the pure economic benefit of NAS aggregation. Front and center in the story were performance claims of how aggregated low cost Windows SAK filers coupled with an NFM switch at a fraction of the cost would rival NTAP who was the clear customer favorite. Early on, the new management team keyed in on the fact that the storage admin's phone, pager, PDA, beeper etc... incessantly rang throughout our discussion. To their credit, the Attune team recognized that our interviewee was not too worried about the cost of hardware, global name space or performance for that matter. It was quite a simple equation. Too much downtime and they could lose their job. They admitted that the environment had gotten so complex, that it was becoming almost impossible to adequately manage and scale their storage infrastructure. Complex fork lift upgrades of larger systems followed by manually migrating data between storage islands was no longer a viable solution.

Acuitive fundamentally believes that Windows and UNIX admins have very different personality traits and respond very differently to certain value propositions. At the risk of making generalizations, many Windows admins have gotten so acclimated to Microsoft offering one way of doing admin tasks that they are often not open to independently solving new issues on their own. Sharply contrasting this, the UNIX admins pride themselves on writing clever home grown



scripts to help keep up. However, there is a problem maintaining their code with new releases and new vendors popping up on the scene. It is clear that these constituencies appreciate very different features and the vendor that best manages to deliver NFM solutions that pleases both of these diverse target customers will have a significant competitive advantage.

As we have watched the evolution of Attune’s thinking over the past year, we are most impressed at their obvious attempt to focus on the higher level problem of taming the storage complexity beast. This is in steep contrast to some of their competitors who in our opinion have optimized for a symptom such as performance or migration and not the core problem....complexity. We believe there are a well known set of features that are frankly tickets to market entry for all NFM vendors. For example, an NFM appliance must be completely transparent to end users and not impact path name; be able to aggregate the global name space; not materially impact IOPS performance; have no negative impact on routine applications like back-up etc..

Solving complexity enables wonderful things for storage administrators who can spend more time on strategic planning vs. tactical response...it allows them to scale more easily, enhance security and reliability, audit activity, migrate users more flexibly, enhance throughput, utilize information life cycle management etc... Attune is attempting to slay the beast not the symptoms.

Attune Systems Feature Mapping

Below is a quick observation of highlighted Maestro features that were recently demonstrated to us that we liked (or didn’t like.) Our opinion is highly based on who we believe the intended users are and the likelihood the targeted user will actually use the feature. Analysts, like movie critics, aren’t always right but nonetheless still have an opinion. To borrow their rating system, Acuitive’s rating system is as follows:

Excellent Feature-Truly Differentiated and of Great Value to the Customer... “A Must See!”



A Solid Well Utilized Feature likely to be a competitive battleground. “Rent it!”



A competitive disadvantage or not very relevant. “Read a good book instead!”



Demonstration Feature Review:

1. GUI

Description: Java based GUI



Comments: A ticket to entry. Very intuitive and should be very well received by the Windows Admins. Superior to Acopia’s ARN Manager.

2. Scripting

Description: Pre-packaged library of CLI commands to configure and execute routine functions to reduce complexity.



Comments: The heart and soul of Maestro. The “out of box” scripts should catch on with the Windows crowd to reduce the repetitive, mundane, manual tasks. Important for Maestro is to not feel like a



new programming or scripting language for Windows admins. UNIX admins will be a little bit more discerning and Maestro will need to allow them flexibility to create their own scripts and even share them with the community. Traction with scripting is the break-out feature for Maestro in either group.

3. Performance

Description: Compare Write Performance of 1 Stripe vs. 4 Stripes
Comments: An impressive demo that will likely combat some of the perception issues regarding Acopia’s hardware solution vs. in-band and out-of-band software solutions. The key to using striping for performance will definitely be generating trust. This will happen gradually over time so this is not likely to be an often used early feature. Also, Windows admins are not often in performance intensive environments and many are terrified of complexity and Windows’ poor support for RAID0 in the past.



4. NFS Support

Description: Access CIFS volumes via NFS
Comments: Using CIFS for back end communication between the filer and Maestro will be the biggest issue that Attune will be positioning against in sales situations. The Windows filer market is a huge market and there are also many usage scenarios where CIFS/NFS are well represented. CIFS is an excellent technical choice but will be scrutinized heavily by the “NFS only bigots” who may not be able to get around their perception of Microsoft’s reliability and security issues in the past. Some silo applications predominately use NFS and may not be able to take advantage of Maestro’s robust features.



5. Global Name Space

Description: View Global Shares
Comments: A ticket to entry “must have” feature.



6. Dual Path Access

Description: Direct access to native volumes
Comments: A huge accomplishment of a non trivial but extremely important feature. As mentioned above, storage admins are notoriously conservative and any product from a start up that hasn’t earned their trust placed in line in the data path will have an up-hill battle. Even without the benefit of extended mode, Maestro will have a much easier time getting into accounts with a gradual immersion strategy enabled by dual path access.



7. CLI

Description: Telnet to Maestro CLI (SSH as well) to run scripts.
Comments: Solid feature for secure remote access to Maestro for centralized management. A “must have” for the UNIX admins.



8. Volume Migration & Scalability

Description: Import Volume from native mode to Extended mode



Comments: A bi-product of dual mode and gradual immersion strategy which does not require an “all or nothing” migration which will be positively perceived by conservative admins. While extended mode is clearly more robust, it will be a gradual process of migration. Simplifying a complicated task that admins’ will find extremely useful and generate time savings through migration and more easily scaling volumes.

9. Volume Migration (and Undo)

Description: Opposite of #8: roll back to native mode



Comments: Let’s face it...people make mistakes or change their mind. One of the likely early NFM sales inhibitors will be concerns over what happens if an NFM vendor loses the virtual to physical map and a customer’s bits get scattered. The ability to roll back from extended mode to native mode will put most customers at ease that they won’t get locked in. If the unlikely worst case ever did happen, they could go back to native mode which will ease most concerns.

10. SetUp Find Job

Description: Find a file extension type (.avi, .wmv,.mp3)



Comments: One of those cute little features that undoubtedly will be one of the first accessible features that admins turn on to give them visibility into the context of their storage. After file extension discovery, this feature will compliment reporting tools for management and scripts to physically move found file extensions to cheaper storage or delete. Coupled with Google desktop, end users will have a much easier time of finding files across a diverse array of filers. Granularity down to the file level enables significantly more control. Trust is earned one useful feature at a time and this is a confidence builder.

11. NDMP Backup

Description: Run NDMP Backup of scratch share via Netbackup to Tape.



Comments: We think Attune makes too big of a deal about NDMP.

The reason why we are less excited about Maestro’s NDMP feature is that we believe the features that will get early traction are not about saving money through license avoidance but about reducing complexity. We are giving all NFM vendors the benefit of the doubt that they won’t break existing tools for mirroring, snapshotting, backup etc. NDMP license arbitrage issue will be at best, a fleeting opportunity not perceived as particularly valuable by many customers because they already have the licenses and will be slow to change. Furthermore, if Maestro does inflict a dent into the NDMP license market it will be copied by competitors or more likely NDMP vendors will find creative ways to prevent loss of their license revenue. {Editors note: management strongly disagrees with us and hopefully they will prove us wrong.}



12. ILM

Description: Run scripts to find files and relay files in new locations.



Comments: There is a high degree of skepticism by customers around ILM since every storage vendor has flogged customers endlessly about their proprietary, complex ILM solutions that must be integrated throughout a multi-vendor ecosystem to truly derive any economic value. When vendors now use the words “ILM” customers hear “Complexity” and want to run in the opposite direction. Despite the unfortunate nomenclature, what Attune has is very valuable and doesn’t require complex integration to achieve 80% of the value that most ILM vendors preach about. Let them fight it out for the other 20%.

13. Rebalance Storage

Description: Run script to change rules to move storage to new locations.



Comments: Today, storage rebalancing is a very manual process. Rainfinity has attempted to build a company around a single feature of migrating data during the inevitable rebalancing process. This is a classic feature that instantly reduces complexity and frees up more time for storage admins to be strategic. Immediate ROI impact of re-capturing storage.

14. Storage Monitoring

Description: Shutdown server and note critical log entries.



Comments: Acuitive is a big fan of monitoring and reporting since storage admins tend to be low in the food chain and need to justify every expense to management. Acuitive is also aware that reporting tools are always the last item on engineering’s “To Do” list before FCS. We realize this and are willing to cut Attune some slack since the product is still a few months away from being in customer’s hands. Acopia’s ARN Site Analyzer shipped almost a year after FCS. Two stars for recognition and intentions and hopefully a three star review with the inclusion of some basic reporting at or shortly after FCS.

Disclaimer:

One final product feature not demonstrated and likely more of a later release feature is MaestroIQ. We are not aware of any feature set like it by other NFM vendors. If the goal is ultimately to reduce complexity, then having systemic intelligence built directly into the fabric that can “learn” unique attributes of a customer’s environment and then suggest or possibly even implement corrective actions is extremely powerful. We are pragmatic that it may take some time for Attune to earn the trust of their customers before they would be willing to heed MaestroIQ’s suggestions and even longer before turning on automation. However, we think the idea is worthy of a five star rating assuming if it does as promised and actually makes it into the product before the 2.0 release. Admittedly, some in the UNIX crowd may never give up control and trust the feature in fear of being a “slave to the system”.

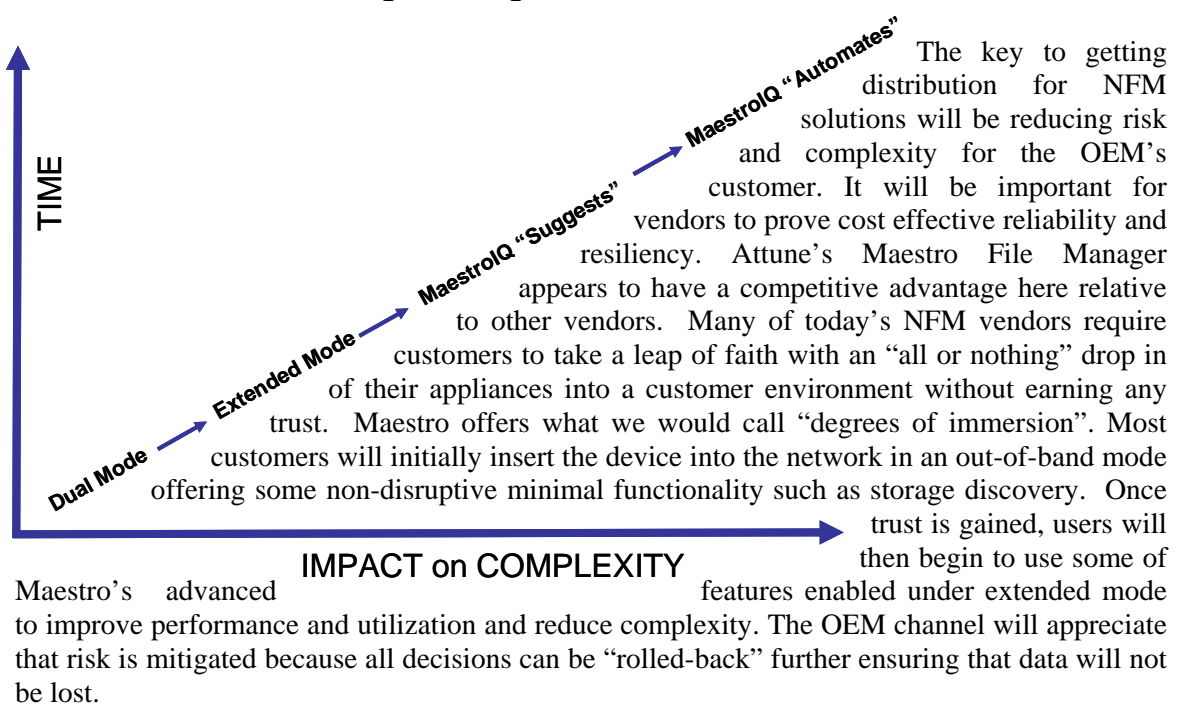


Facing the Music: Distribution

For most companies, data is their most important asset and protecting that asset is the number one priority for storage administrators. Storage IT managers are some of the most conservative IT buyers and the most difficult for new companies to penetrate. Building a level of trust is as much about personal relationships and reputations as it is about technology. There is a small club of “elite” vendors (IBM, HP, EMC, Network Appliance and HDS) who have earned the right to be called a trusted partner of Fortune 1000 enterprise storage customers. These vendors often control access to the end customer because they are the “blessed” channel and working well with them is an absolute requirement.

Perhaps the best recent example of leveraging a partner’s trust to get access to paying customers was Brocade and McData’s success with Fibre Channel SAN switches initially delivered through some of the trusted OEMs mentioned above. Backed by the OEM’s support infrastructure, once these vendors’ earned customers’ trust, these vendors began to penetrate top tier accounts with direct distribution on their own. There is a preliminary step to developing OEM relationships in which all NFM vendors will have go through. In order to get on the radar screen of a potential OEM partner, the new vendor needs to show some early customer traction, preferably in environments where the OEM is dominant yet doesn’t have a competitive point solution. OEM’s would rather bring on a new third party platform so they can keep competition from gaining competitive footing in major accounts.

Maestro File Manager’s Degrees of Immersion



In the real world, cost effective high availability and redundancy will also play a major role in getting distribution from the top tier OEMs and Systems Integrators. Let’s not forget that these elite channels often add a hefty mark-up before they deliver a solution to the captive end user. Because of a separate meta-data store, Attune’s Maestro File Manager is available in an Active/Active configuration offering both high availability and linear performance scaling compared to other devices at significantly less cost. Some vendors such as Acopia and Neopath



only offer Active/Passive availability which means that while users are protected from equipment failure it comes at a significant incremental cost with no added functionality or performance. Acopia's is not likely to get much traction with OEMs since their custom hardware appliance, quite expensive to begin with, requires different appliances for CIFS and NFS and is only available in active/passive mode which when will then be marked up by an OEM likely making it non-competitive.

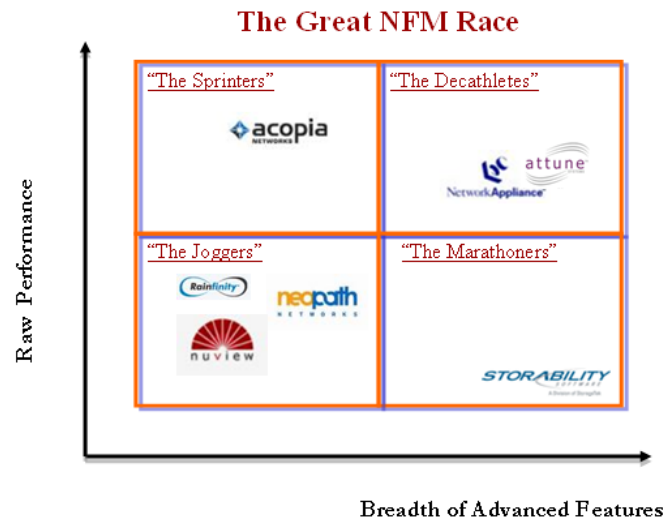
The Sweet Spot for Attune Systems:

Because the opportunity to reduce storage complexity is so large, a number of vendors are staking out their position in the race. We believe that customers are all different and that alternative value propositions will resonate to different audiences depending on their application. We believe the NFM market will be big enough to support multiple vendors. It is interesting to observe how vendors are positioning themselves. The "Sprinters" like Acopia may focus on a single attribute such as latency or throughput above all. This focused message will appeal to the performance sensitive part of the market such as the Oil and Gas and Film and Video markets. Their latency performance is impressive with little incremental file I/O overhead from their in-line device. Their performance optimization does come at a cost. Acopia had to build expensive custom hardware which will not be as flexible as a software solution to refresh and to scale. With partitioned devices for CIFS and NFS that are active/passive it is clear that the design goal was performance at all costs without respect to a diverse feature set.

"Joggers" are defined as a group who do a limited number of things well without much emphasis on optimizing for performance. Rainfinity makes an out-of-band device that does an excellent job at pragmatically migrating data and capacity balancing of native files.. Since it is not in-band, there is no performance impact at all and the appliance has a relatively low TCO since it does not require multiple devices for HA. A downside of Rainfinity is that is not transparent to the user as directory path names will change for some users. Rainfinity's goal is not to permanently eliminate complexity but to make it easier to deal with.

Neopath is another vendor in the "Jogger" category. Their first product is a Linux based, in-band NFM with a very basic set of features. Neopath's early market entry highlighted cost and solid delivery of check off features like unified name space, NFS support and policy driven migration. Limitations of the File Director are SAMBA only CIFS support, active/passive high availability and limited scaling. Neopath's 1.0 product feels like an "in-between" product that won't offer the raw performance of an Acopia on one side but also lacks the features of an Attune Systems on the other.

"Marathoners" are a class of NFM with a rich diverse set of features but little attempt at performance. Conceptually, SRM vendors like Storability, while not in the appliance category,



make similar claims as their hardware NFM counterparts regarding functionality but deploy agent software on servers.

“Decathletes” are NFM vendors who offer a diverse set of meaningful functionality to reduce complexity but not at the expense of performance. NTAP and Attune Systems fall into this category although there is much conjecture about Network Appliance’s plans after their \$350 million dollar acquisition of Spinnaker Networks. Many argue that if NTAP’s ten year old ONTAP operating system and their WAFL file system could handle scaling and virtualizing more than a few NTAP filers together their would be no NFM market opportunity. Individual NTAP filers offer excellent single filer performance and their system software for mirroring and snapshotting is the best in the industry. However, NTAP has to accept the realities that they live in a multi-vendor world. The merger and integration of Spinnaker is a massive undertaking and will delay their entry into the NFM market. If successful at becoming more open than in the past, NTAP/Spinnaker combination could define the “Decathlete” category. It is clear that this effort could take as long as two years of integration. Early versions of a new ONTAP/SpinnakerOS merged file system will likely not be performance oriented potentially dropping NTAP into the “Marathoners” category.

Attune Systems sweet spot will likely be the storage environment where lots of Windows filers have proliferated. It is unlikely that these environments will be performance oriented since it is rare to see Windows filers in performance enterprise applications. Since Windows Server 2003 filers do not offer nearly as much functionality as Maestro there is a good chance of adoption for Maestro Rules. Windows admins are used to a limited number of options given to them by Microsoft so it will be important to not intimidate them having to learn a scripting language. Out of the box there should be a reasonably large number of canned Maestro Rules to automate some of the many mundane tasks they spend their day chasing down.

Potential Challenges for Attune Systems:

Microsoft CIFS “certified” is a double edge sword and while appealing to some it may be chaffing to others. Attune is the first NFM vendor to offer non-disruptive dual mode support which was a wise design choice. It is however, very apparent that most of the value of Maestro comes from extended mode. Making extended mode support accessible to as many back end filers as possible will increase the Served Available Market for Maestro. The good news for Attune is that if you look at the numbers, the NAS market grew 25% in units in 2004 with Microsoft’s Windows 2003 Server Kit market share growing to over 50% market share in NAS units shipped.

There are many UNIX admins who simply will not use extended mode because Maestro requires CIFS as a protocol to communicate with the backend filer. While CIFS is a robust protocol it is too closely associated with Microsoft whose reputation in the data center for security vulnerabilities and instability is considered a liability to some. NFS bigots, particularly those in performance sensitive silo applications, may balk at CIFS and therefore will not benefit from Maestro’s extended mode capability for tasks such as striping across multiple, heterogeneous filers to improve file transfer performance. Certain verticals like oil and gas, film and video post production and technology have a high NFS penetration. These markets would otherwise be a perfect fit as since their applications tend to deal with large files where the performance impact of an intermediate device tends to be minimal when amortized across a large file transfer. In comparison to NFS, the CIFS protocol has a fair amount of overhead which is negligible in large files usage cases but for small file usage cases the impact may have a much larger percentage impact on performance of small file transfers. While high end vendors like NTAP have



significant revenue market share (38% of the \$2B NAS Market in 2004) they don't ship a lot of units. For example, NTAP only shipped less than 10,000 units last year out of an estimated 250,000 NAS units shipped in 2004, suggesting that the potential impact of NFS only shops could be small assuming NFS only is a subset of NTAP's business

Like any other intermediate device, Attune will have to prove its reliability, non-disruptiveness and minimal performance impact with real bench marks. In a perfect world, users would get all of this functionality from their native filers without having to manage another device. This is not a unique issue for Attune and will affect most NFM vendors.

Timing is always critical and will be particularly true for Attune given the sequential "degrees of immersion" discussed above. There is clearly a window of opportunity for NFM members to establish themselves. We can't emphasize enough how important it is to evangelize support for Maestro Rules in the community and have a robust customer engineering organization developing and evangelizing useful scripts that can expose Maestro's unique capabilities. Attune has all of the required market entry check off features to be competitive and early Maestro acceptance could give them a competitive edge.

Acuitive's Conclusions

Any early stage company has to overcome two types of risk along the journey. Failure to navigate either type of risk can be fatal.

- Market Risk- "If I build it, will there be a market for my product?"
- Execution Risk- "There is a market, but can my team build it on schedule?"

Over the past nine years, Acuitive has not seen an IT trend where it was so clear that a major market opportunity was available to a vendor(s) who figures out how to reduce the complexity of networked storage. As mentioned above, this is an execution risk play and not a market risk play which is attractive.

It is too soon to tell whether Attune has a superstar execution team since they have not delivered the 1.0 version of the product as of this writing. Good things come to those that wait. While we would have preferred that the product been in the market sooner, we appreciated the management team's discipline to continually validate the market, honestly self assess and have the patience to attempt some difficult (dual mode) and differentiated (Maestro File Rules and MaestroIQ) features and not rush a 1.0 version of the product to the market just to be first.

We think the Maestro product should be received well with its balanced approach in terms of breadth of features, performance and cost. We think that the Windows storage administrators should grasp the value proposition of Maestro immediately. While we don't think they will initially value the performance oriented features, we think they will love the built in fabric intelligence that they have never had in the Windows storage environment. Conversely, we are less sure about the UNIX administrators' acceptance. If the population of NFS bigots is small and they can get past the CIFS back-end issue and desire to write their own home grown scripts, we think Maestro will dramatically reduce complexity and improve the performance of their high end filers. If Attune Systems can manage to serve both masters (or at least one) they could have a significant strategic opportunity that will not go unnoticed by the "elite" blessed traditional storage vendors.

Stay tuned Maestro....the music is about to start!



About Acuitive:

Acuitive, founded in 1996, is a consulting firm primarily focused on early stage technology infrastructure companies with particular emphasis on the intersection of storage and networking. Some our research can be found at <http://www.acuitive.com/rr.html>. Former clients include Brocade, Chelsio Communications, Cisco, Extreme Networks, Neoscale, Nortel Networks, Topspin Communications and over 100 start-up companies many of whom have gone on to go public or be acquired by public companies.

Acuitive has four main practice areas: Market Validation Practice, Product Marketing Practice, Product Management Practice and Market Research. To the right is a sample of some of the leading IT customers that Acuitive engaged on behalf of Attune Systems.

Tom Garland is an infrastructure consultant for Acuitive who specializes in market validation. Tom has twenty years of technology experience. Tom spent eight years at SGI in their advanced computing and storage division and helped lead Mpath to their initial public offering.

Tom graduated from the Graduate School of Business at Stanford University.

