The Future of Enterprise IT Services — Sun Says "It's All in the Instrumentation"

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Management Summary

Management of IT environments has evolved over the years from vigilant monitoring to managing by exception. Now, as we start to automate operational best practices, the *need to know* becomes less – or does it? *It depends* – on whether you see management as preventative (as in assuring availability) or as a proactive way to move towards a real-time optimized environment with the ability to choose the best way to adapt to changing conditions. In the former case, automation prevents errors, and alerts pop up less frequently. In the latter case, however, everything must be metered, and everything must be taken into consideration (though not necessarily by a human administrator), in order to thoroughly know what is going on when nothing is "wrong." **Such detailed metrics are the basis of the ability to make the *right* decision about a situation in real time.**

So reasons the current Sun services vision. Hal Stern, CTO of Sun Services, and his cohorts envision a more holistic and widespread use of metrics – not just device metrics but higher-level metrics of applications and operating systems, automation, and even business outcomes. They would aggregate the metrics of normalcy as well as metrics of exceptions to determine not just what is safe but what is the best overall response for a problem, a deployment of a new application, or the need to reduce data center costs and complexity. By using this technology-based approach, Sun's services often can be delivered as a software product.

Stern believes his is the only way to get beyond steering based on yesterday's information. The reason for over-provisioning is to provide headroom that is needed for reaction time in system management. As applications become interlinked and faster rates of both changes and response are demanded, management of high-utilization environments thus becomes like driving on rush-hour highways at 75 MPH with everyone following much too closely and where any gap you leave for your own comfort is immediately taken away by an opportunist. This is not a job for the faint at heart. In Sun's view, it may not be for those with hearts at all, but for the telemetry and analysis of service applications.

Sun's intention to instrument "everything that has a heartbeat"[1] includes not only its products but also its service delivery force. What are the ramifications of this approach and what does Sun plan in the near term? For more details, read on.

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[1] Hal Stern, Sun Services Analyst Day, Burlington, Mass., December 16, 2003.

An Ounce of Prevention Starts the Route to Utility

Sun sees the proper instrumentation of elements and real-time use of metrics as the key to true *utility computing.* This approach is like the Frederick Taylor time-and-motion-studies that transformed assembly lines of the early 20th Century. Hal Stern, wants to broaden this concept to convert all aspects of service engagements to measurable qualities[2]. **Measurability is also key to determining how best to deliver the human aspect – and what needs to be done by software.** As the tempo of computing and the rate of IT change gets faster, and as the human touch gets more expensive, software will, inevitably, become a more important component of technology service delivery. The first stop on the route to utility is the rise of preventative services.

The Rise of Preventive Services

Sun's Preventive Services[3] illustrate Sun's metrics-based vision. Stern sees preventive services as problem avoidance. **The Sun methodology here focuses on a cube of P's: *Predictive, Proactive, and Preventive*.** The ability to *predict* the occurrence of problems is advancing rapidly. More can be known, even about compute elements that are not inherently self-knowing, via agents. More can be reported, with SNMP. More can be aggregated, stored, analyzed and modeled, increasingly on-the-fly, in something approaching real-time. *Pro-active* management then becomes realistic, and *prevention* possible.

Pro-active management moves he effort from knowing what to do when, to knowing not just *what* is happening but *why*, in enough time to do something about it. Mobs of metrics must be collected and analyzed in order to mitigate any situation. Half measures, obviously, will not be good enough. And the more you measure, the more you will find to be measured, particularly when you are not

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[2] Such optimization is done in some form by many sales and service forces – but implementation of measurability is often an emotional issue.

[3] For more information on Sun's service offerings, see **The Clipper Group Captain's Log** dated September 15, 2003, entitled *Sun Managed Services – Team Teaching Enterprise IT Change*, available at http://www.clipper.com/research/TCG2003046.pdf.

limited by a human overload threshold. Often management by metrics limits objectives to what is well measured in the short term. The challenge will be to build long-term goals, like building new markets and loyal customers.

Sun is building a network object model to deliver fully on this ambition. In the meantime, Sun offers an operational risk index that allows enterprise to assess their *cost vs. time vs. risk* balance, and the consulting to implement this strategy.

The Computing Utility

For Sun, utility computing is a matter of charge-back for *everything* – not just the capacities of processor cycles and storage, but usage of applications, middleware, operating systems, and fabric devices. While the pricing scheme presented to the end user may be simplified, Stern emphasizes that **the metrics underlying the rate must be complete in order for the pricing model to be both competitively low and adequate to cover costs.** Whatever is left out is a continuous drip of inefficiency that compromises the process. Like cost accounting that ignores actual usage – they may be simpler, but they lose considerable value as a planning or modeling tool. Nobody ever said the utility approach was *lite*.

Preconditions for this Approach

This vision rests on several pre-conditions; all are possible, but some are easier to attain than others:

- **All assets must be networked.** This has been Sun's vision for over a decade, which has been widely adopted as far as management of assets and processes is concerned. While there are some who worry about the security of pooled assets, few want segmented manageability.

- **A full set of metrics must be derived**, not just from every node of an IT environment, but from every segment of connectivity, and from the logical layer, and from middleware, and operating systems and applications – and the LAN and the clients.

- **The instrumentation and monitoring must not incur a heavy performance penalty.** While test environments will

give much information to build the algorithms to manage IT environment in real time, the implementation of this management intrudes more on production environments than does management by exception. The agents must be efficient, secure, and lightweight. The ability to multiplex the connectivity and control the bandwidth used by agent-based services is key to this approach's viability.

- **The analytics to extend and refine the best practices gleaned from decades of data center operations must be developed.** How much can be carried over from manual management remains to be seen – as more variables are added, some old precepts become outmoded. This may be a cultural sticking point for many enterprises.

- **There must be a willingness to subject IT environments to additional overhead** in order to get a higher, more granular degree of manageability than may be available by other approaches.

Conclusion

Sun's vision is unique in its intensity and somewhat incongruous in an interactive culture of expertise, teaming, and knowledge transfer. But when you come down to hard thinking about the technology systems of IT, (not the business processes that they support), the worth of this approach is clear. You cannot optimize what you do not measure. As the role of external services in IT environments becomes greater[4], the need to optimize them becomes larger as well. Sun's vision should give you food for serious thought.

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[4] See **The Clipper Group Explorer** dated February 5, 2004, entitled *Services – a Vital Tool for Accelerating Enterprise Responsiveness,* available at http://www.clipper.com/research/TCG2004007.pdf.

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