

Network Management on a Budget – Doing More with Less

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This piece provides valuable tips and guidelines on adopting the right network management solutions for mid-market environments. The network management issues faced by the mid-market are as multifaceted and intense as those in many Fortune 500 corporations, but the opex and capex resources to cope with these are much more severely limited. This report is dedicated to providing network engineers and IT planners in those environments with essential advice on how to define and implement a solid network management environment — without sacrificing their budgets or the integrity of their networks. The report will provide insights on market trends, technologies, process-related best practices, usability requirements and other areas that IT planners and network engineers should consider when managing their networks on a budget.

Network Management on a Budget — Doing More with Less

The evolving “utility computing” model, in which IT services become gradually more automated and responsive to shifting business demands, will require increasing alignment not only between IT and the business it supports, but between and among businesses that work together in an integrated ecosystem. This approach requires close and efficient data exchanges among all the participants in the services delivery process. In this model, small and midtier businesses can and often do play as vital a role as large businesses, and so midsize and small businesses must be prepared to move in step with the total business ecosystem if they expect to remain competitive.

As a result, the immediate consequences of inadequate IT operations can be significantly more detrimental to a midsize business than to a multinational corporation with a critical mass sufficient to “set the stage” and “define the terms” for industry success. IT management deployments in midsize environments must be executed with no less finesse than in large corporations, with close attention to technological and process detail, and a willingness to invest in integrated solutions rather than an array of siloed point tools. For the purpose of this piece, we will focus our discussion around the mid-market, knowing very well that some of the concepts discussed are also applicable to the smallest and largest of organizations. The mid-market, in the context of this article, generally applies to enterprises that support networks of 500 to 5,000 nodes. Given this definition by network size, some large enterprises also may see relevance in the recommendations we make to serve subsets of their extended network environments.

Primary Drivers

The IT organizations within midsize enterprises are under even greater pressure than the large enterprises because of three fundamental trends:

- **Expectation creep and service diversity** are continually raising the bar on IT infrastructure performance. For example, not many years ago eight seconds to load a Web page was acceptable performance. Today, anything more than two seconds is considered detrimental to business efficiency. From the perspective of diversity, managing VoIP and IP service convergence slowly are being assimilated into mainstream IT management requirements. However, these still remain hampered by fragmented, niche tools even while IT customers expect seamless, integrated voice and data services. The availability of appropriately skilled technical personnel is in short supply, while the growing array of infrastructure- and application-related technologies is putting added demands on IT personnel.
- **Security and compliance concerns** have risen dramatically in the last five years, adding yet another set of burdens on midtier IT, which is no less exempt than its larger brethren from meeting industry-specific compliance standards, and providing secure services for its internal and external customers.

As a result of these and other trends, IT operations in midsize environments have an even more intense need to “do more with less” than larger enterprises. Their IT issues are as multifaceted and intense as those in many Fortune 500 corporations, but their ability to acquire resources to cope with these is much more severely limited.

Technical Issues

The following are some of the main issues that plague these environments:

- **Higher density of IT devices:** Both network and systems devices have become orders of magnitude more complex in part to support a wider array of services, and, on the systems side, to support requirements for virtualization and grid computing.

- **Proliferation of point IT management tools:** While point tools still might serve a purpose, they tend to be adopted in an ad hoc manner and stimulate siloed processes rather than the effective management of the infrastructure as a whole in support of service delivery.
- **Disparate user interfaces:** Siloed tools managing individual device types create another form of overhead, as each typically requires knowledge of a specific command lexicon.
- **Inadequate training:** Most management products are drastically underutilized because of product complexity combined with poor training — especially where IT management or administrations tasks are carried out by low- or inappropriately skilled personnel.
- **Too much data:** Tools output a lot of data but are short on useful pre-processed management information.
- **Traditional framework solutions:** These have defined network and systems management market for years, but have not been designed with the midtier businesses in mind. They often require a dedicated, trained resource just to manage the management system, along with what are often hefty software, services and maintenance price tags. By contrast, quick time-to-value is critical for the mid-market.



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Product Requirements

The dual “whammy” of growing IT operational complexity and the short supply of appropriately skilled labor in the small to midsize enterprise markets are driving the following requirements for IT management tools:

- **Easy-to-deploy**, integrated suites of IT management. Point tools cannot support IT operational efficiency unless the output to users is sufficiently integrated to provide a “global” picture of the IT environment and permits focused remediation actions. Midtier IT should seek out solutions that can bring fast return on investment, realizing that there are some product suites available with documented deployments in less than a day.
- **Easy-to-use** tools — preferably with a common and intuitive user interface. Small and midsize enterprises cannot afford prolonged training for their technicians. In many cases, IT tasks are performed by “technology-literate” employees with little specific IT training.
- IT products must have **breadth and depth**. IT operations in the midtier and below still require the architecture and functionality to address new technologies, increasing and more complex business interdependencies, and policy-driven management to ensure effective efficiencies, governance, security and compliance. Some of this breadth and depth is strengthened by the following design points:
 - ◆ Integrated event- and flow-based information — This includes integrated insights into infrastructure components through events and application traffic through flow-related information.
 - ◆ Integrated configuration information — Well over 60% of performance and availability problems are caused by configuration changes, most of which are the result of human error. Integrated capabilities to audit configuration changes as they impact infrastructure and service performance is key.
 - ◆ Products that can support diverse populations (e.g. help desk and operations).

- The IT management product must be **easy to maintain**. Midtier and smaller IT operations can support only a minimum number of routine tasks, such as data aggregation, purging or even backup; otherwise, product complexity quickly can become part of the problem rather than the solution. Maintenance of the product itself should ideally require no more than an hour a week.
- The product must be **flexibly configurable**. — Management products should support the need for unique functional requirements without forcing IT to purchase unexpected, additional tools. On the other hand, superfluous functionality in excess of what’s needed can create problems in deployment and use.
- Tools sets must be **functionally expandable**. Too often a major “forklifting” of the initial toolset is required as the IT environment changes or as operational tasks become more sophisticated. Ideally, new functions required in the IT environment should be modular in nature, with the capability of adding in new capabilities that integrate with an established functional base.
- The **pricing structure** of these tools must be simple enough to offer easy comparisons to other products or services for initial purchase and future functionality expansion.

Choosing a Product for the Small and Midsize Environment

Choosing a product can be a time-consuming and labor-intensive activity, even though the number of vendors and service providers for the small and midsize market is relatively small. The reason for this is that IT management frameworks with robust functionality do not scale down in price, while price-accessible point solutions are no longer adequate to maintain efficient IT operations. To date, cost has been the primary driver in the small- to midsize-business market for making toolset decisions, to the detriment of functionality. However, Enterprise Management Associates (EMA) says that this market can no longer afford such unilaterally price-dominated deci-

sions, especially given the rising importance of IT to the business.

Software or services?

Not unlike the large enterprises, small and midsize businesses must start with the fundamental question:

“Can I afford to relinquish control over IT operations, on which the welfare of my business is so dependent, to an external entity?”

This question has little or nothing to do with technology, but instead centers around the key business issue of risk management. Answering this question significantly will reduce the time and effort required to select and deploy an efficient IT management system for your specific environment. The following two logical formulas can be used as guidelines for selecting a software or service approach — either overall, or as targeted to specific areas and domains within IT.

Choosing the Service Provider

Optimization in favor of cost and convenience

Advantages:

- No competition for skilled labor force.
- Technology advances transparent.

Disadvantages:

- Limited control over business welfare.
- May not fit closely to IT's specific requirements.

Choosing Internal Management Approach

Optimization in favor functionality over cost

Advantages:

- Total control over business welfare.
- Superior potential for tailoring tool choices to individual and organizational needs.

Disadvantages:

- Competition for skilled labor force.

- Management technology advances will require attention and can sometimes be disruptive.

EMA says that as business dependencies increasingly are associated with IT services, assuming greater control over business welfare will become more and more important. And while outsourcing some management services often makes sense, midtier companies where IT is central to the business should be very cautious about an all-or-nothing approach in favor of outsourcing.

Guidelines for Phased Adoption of New Technologies

In order to optimize management product selection, EMA recommends the following steps/guidelines:

- Initial strategic alignment and planning — Don't give short shrift to understanding how your IT organization can better align to business goals. Healthy, ongoing interaction with your customers (internal and external) can do wonders to improve your relevance and effectiveness.
- Organizational and process audit — Take the time to make sure that organizational issues and poor processes won't get in the way of an effective management strategy.

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- **Audit what you've got** — Make sure that you really know what management tools you're using, and who's using them and why. Identify redundancies and seek out areas that are under-addressed.
- **Creating a phased plan** — Develop a set of phased objectives and measurements for your management strategy that fits your particular goals.
- **Product selection and integration** — Once you've done this homework, you're ready to set criteria for, and select, the right management tools.
- **First phase checkpoint** — Stay with your phased plan. Honor the first checkpoint and recalibrate as need be based on what you've learned so far.

Conclusion

While smaller businesses, including midtier enterprises, face a number of challenges in addressing their IT service management needs, the situation is certainly far from hopeless. There are a small but growing number of innovators that provide cost-effective, deployable technologies, and there's every reason to be optimistic about the future and demanding in the present. However, pursuing an effective management strategy also will require making demands of yourself — to ensure that you align with business objectives, know your organizational and process issues, and know what tools you're already using and where they're redundant or deficient. Taking the time to do this homework can be an invaluable foundation for applying the criteria discussed in this article to a fruitful selection of appropriate management solutions.

Product Spotlight:

SolarWinds IT management tools are designed to meet the needs of multiple audiences, including:

- **Engineers** — who want functionally robust technical tools to help them do their jobs more efficiently and automate routine tasks.
- **Mid-market** — network environments with 100 to 5,000 nodes where ease of deployment, use and main-

tenance. Robust integrated proactive functionality at affordable prices. Also, environments that failed to effectively implement framework-based solutions or cannot afford large investments into such packages. Finally, homogenous network environments with 50 to 500 nodes where priorities are ease of deployment, use and maintenance with integrated functionality at affordable prices.

SolarWinds designed its Orion, Toolset and Cirrus products specifically to deliver on most of the critical requirements mentioned above in order to alleviate constraints inherent in mid-market environments, while also providing users with the benefits of:

- **Quick implementation time** — Management tools usually can be installed and start collecting data within an hour, rather than the many other NMS systems that may take weeks to deploy.
- **Ease of use and reliability** — Tools designed by network engineers for network engineers. The intuitive user interface and wizard-based setup reduces installation, operation and maintenance of management tools.
- **Robust multi-disciplinary functionality** — Network fault, bandwidth, performance and configuration management applications let users view real-time and historical statistics from any Web browser as well as automation of routine administrative tasks, such as nightly backups. This saves network engineers significant time.
- **Scalability** — Tools can scale by simply adding polling engines that share a common Open SQL database and user interface. Whether the network is 50 devices or 10,000 devices, the environment can be supported without major configuration changes required.
- **Low operational cost** — IT management tools run on Windows servers, which are less expensive to operate and maintain with more skilled individuals in a labor pool.

Orion Network Performance Monitor – fault, bandwidth and performance management application

- **Access** from any browser enabled system.
- **Availability** monitoring.
- **Real-time statistics** for fault, bandwidth and performance management.
- **Flow-based data** to supplement SNMP to enhance the functionality robustness and flexibility.
- **“Bolt-on” functionality** modules such as:
 - ◆ NetFlow Traffic Analyzer
 - ◆ Wireless Monitor
 - ◆ Application Monitor

SolarWinds Engineer Toolset – 47 distinct network diagnostic tools

SolarWinds Toolset provides engineer-level diagnostic tools to help discover, configure and monitor networks. The toolset also helps with identification and remediation of network failures. The 47 tools in SolarWinds’ toolset can be subdivided into 10 categories, as follows:

Network performance monitoring tools	Network discovery
Cisco routers	Fault management
E-mail management	MIB browsing
Security	SNMP trap
PING based diagnostics	IP address management

Within each of these categories, there are specific function tools. For example, the Network Discovery Toolset consists of:

- **IP Network Browser** — Allows you to perform a detailed discovery on one device or scan a range of subnets.
- **Network Sonar** — Uses a SNMP discovery engine to create a detailed discovery database of a high-speed data network.

- **MAC Address Discovery** — Scans the subnet on which a computer is attached and constructs a table of relating IP address to MAC address, DNS, network card manufacturer and manufacturer address.
- **SNMP Sweep** — Queries an IP address range defined and then locates both used and unused IP addresses.
- **Sub-net List** — Discovers all subnets and masks on a network.
- **DNS Audit** — Inventories an IP address and validates the correct forward and reverse resolution of domain names.
- **Switch Port Map** — Is an auto-discovery Layer 2 and Layer 3 port map.

Cirrus Configuration Manager – automates network configuration management in heterogeneous and multi-vendor environments

- Schedule device configuration backups.
- Implement configuration changes in bulk (IOS and firmware updates).
- Generate detailed configuration reports for inventory, change and policy management.
- Receive notification of device configuration changes.
- Thorough out-of-the-box policy management reporting.
- Identify configuration violations.
- View detailed change history and side-by-side comparison of configurations.
- Perform detailed device inventory for each managed device.

All SolarWinds solutions are available for download (30-day free trial) at www.solarwinds.net.

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