Business Infrastructure Management

Maximizing Results from your Investment

WHITE PAPER – April 2005

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Executive Summary

According to the Gartner Group seventy percent of all enterprise network, applications and systems management (NASM) framework investments fail. The key reason why NASM investments do not deliver value is that enterprises cannot continue to invest effectively in the systems they've launched. The tools of technology management are as complex as the systems they manage. This complexity effectively causes enterprises to invest in technology twice: once to operate the business and a second time to manage technology assets. In today's environment very few enterprises can comfortably afford both investments.

Before making any decisions regarding NASM, enterprises should evaluate how much value the existing strategy has provided. The following categories, as developed by Peter J. Sevcik of NetForecast Inc., are a simple method to determining NSM value to the enterprise.

- **Chaotic** – Little or no formal management of technical infrastructure. Users generally fix problems themselves or with help from peers.
- **Reactive** – Basic tools such as event monitoring, topology maps, inventory systems, and trouble ticketing are in place. However, these systems are not well coordinated and the staff often reacts to crises that can severely impact the infrastructure.
- **Proactive** – NASM tools are sophisticated and integrated to provide advanced services such as performance management, change management, automated configuration and availability management. Technical staff reacts to issues primarily relating to new application rollouts and functional business changes.
- **Predictive** – Integration of NASM tools and procedures into the business planning process permits capacity planning, smooth application roll-out, and service level agreements. Technical staff is rarely in crisis.
- **Integrated** – This level of maturity integrates NASM to business metrics. NASM reports on the health and effectiveness of the technical infrastructure in specific business unit metrics.

Technology is an integral part of the enterprise and often leads to new business solutions. Properly assessing where your organization fits on the value scale is the first step in deciding how to proceed up the NASM scale while avoiding the pitfalls that lead to failure.

Guiding Principles

P4 carefully considered the NASM value scale and utilized it to identify the key impact areas that contribute to success. The Titan™, our Intelligent Performance Management platform and selective outsourcing framework are specifically designed to help deliver on the promise of NASM.

Cost Management Solution

The ultimate arbiter is always cost and return on investment. Business infrastructures have several identifiable and quantifiable cost points such as downtime, support costs, productivity and lost revenue. An InfoNetics study recently revealed that downtime at enterprises of more than 1,000 employees cost about $7.8 million per year. Lost productivity begins to occur within 3 seconds of an outage, and customers will leave a Web-based system if response times are greater than 8 seconds. NASM systems must therefore be able to support initiatives that ensure enterprise resources are focused on delivering systems that optimize these factors.

Easy access to Service Level Reports and Customer Service

The end game of effective NASM platform integration is to deliver summary information that communicates true service levels and provide comprehensive access to issues and their resolution. The various tools and techniques that underlie the information are critical to delivering on this goal but need not be visible to be effective. P4 has developed a single interface that is viewable from a browser to enable all management functions, including configuration of business metrics, service level reporting, change request processing, issue status reporting, performance reporting and device status. The interface also supports complete drill down capability to provide lower level details if desired.

Facilitate Expedited Root Cause Analysis and Repair

The reality of any NASM system is that it ultimately must process and deliver alarms from a variety of network devices such as routers, switches, servers, and LAN/WAN gateways. The impact of a single device failure can be a literal storm of information as the failure impacts the ability of multiple devices to function properly, causing them to also send alarms. The answer to this dilemma is to integrate root cause analysis into the NASM platform so that only the causal alarm is surfaced. This simple process can eliminate unnecessary troubleshooting time and speed issue resolution considerably.

Comprehensive Performance Measurement

To achieve true integration a NASM platform must view IT performance from a business unit perspective. The ability to construct and report on business level metrics is critical to developing a NASM system that supports capacity planning, smooth resource deployment and leads, rather than follow the evolution of business processes.

Flexible Architecture

NASM systems are dynamic and should evolve to embrace new requirements, technologies or changing business environments. The decision process employed to choose NASM tools and the methods used to integrate them need to consider how they will support growth, technical evolution and long-term viability. These are hard decisions that require significant time to consider.

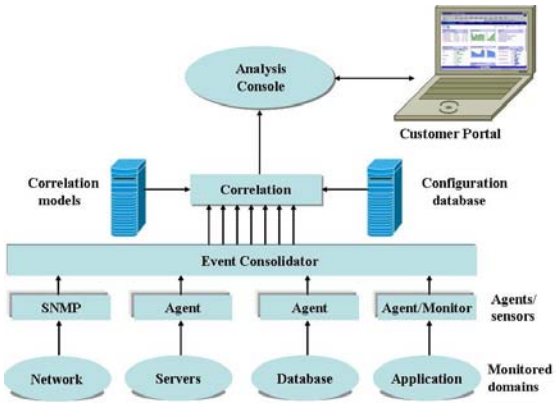
Tolerance for Downtime

NASM technologies should be integrated with technical operations and other business processes at a level that supports the enterprise's tolerance for downtime. Downtime goals are not universal across all applications and business functions and NASM systems must be flexible enough to accommodate different goals for specific aspects of the technical infrastructure.

Titan™ Technology - Sum Is Greater Than The Parts

Translating these guiding principles into action required development of a NASM platform with specific technical capabilities while operating as a cohesive system that could bring a business focus to technology. The technical architecture was divided into functional areas so that specific information was available to all levels of the enterprise from Support Staff to Business Unit Managers, and CIO/COO's.

Titan™ Intelligent Performance Platform



Platform Capabilities

NSM integration starts by selecting systems and tools that interact with a number of points and subsystems
in the network. These technologies can be viewed as the senses of the NASM system through which all information is gathered and actions are implemented. Specific tools will be discussed in later sections.

Network Elements

These are the backbone of any modern IT infrastructure and include everything from desktop network interface cards to hubs, routers, switches, and application servers. Network elements typically comprise the largest population of network devices as well as the largest investment. In order to effectively manage network elements NASM systems have to address device configuration, asset inventories, change control, alarm reporting, and remote diagnostics.

LAN/WAN

Business processes are often interconnected across locations within an enterprise. These interconnections typically utilize a variety of different technologies, vendor equipment and service provider circuits. NASM systems must therefore be capable of interacting with standards based protocols and proprietary vendor operating systems as well as diagnosing issues which may arise from exchanges of information between the various systems and topologies.

Enterprise NASM systems must be flexible enough to manage internal and external network elements, LAN/WAN links, and security policy administration as well as server and application performance. Pragmatically some of the restoration and repair actions must be delegated to IDC personnel.

Security/Policy Management

The current world climate and evolving work methods like telecommuting make an effective security policy paramount to today's business processes and systems. These policies have to be developed, tested and implemented while balancing the needs for security with flexibility to accommodate user requirements. In addition one security policy is not sufficient to address all applications and business processes. IT organizations need an Intelligent Management platform that allows multiple policies to be developed and implemented while retaining the ability to change as new requirements surface.

Remote Access/VPN

The emergence of the Internet as a viable alternative to private remote access infrastructure in combination with Virtual Private Network (VPN) technologies presents several new challenges. Remote access strategies are typically developed to provide access to specific business processes like Sales Force Automation, Claims Adjustment, and Electronic Mail and usually involve some degree of automated synchronization between the host server and the remote device. VPN strategies are evolving because of their ability to provide a secure means of telecommuting and access to remotely enabled business functions. To effectively manage remote access and VPN technologies, the NASM system must leverage element, LAN/WAN and security policy management capabilities to provide the appropriate level of access without compromising security.

Application Management

Businesses are increasingly relying on enterprise applications and databases to stay competitive and enable rapid innovation. NASM really need to be intelligent management platforms that are integrated with the proper application tools/probes to measure feature, functionality and transaction performance. Proper thresholds need to be established and implemented in order to provide the highest level of service management and availability. Monitoring your transactions from the end-user perspective by measuring critical Web application element details and network components (including DNS Lookup Time, Initial Connection Time, SSL and more), as well as network and database performance.

Web-based Portal Management

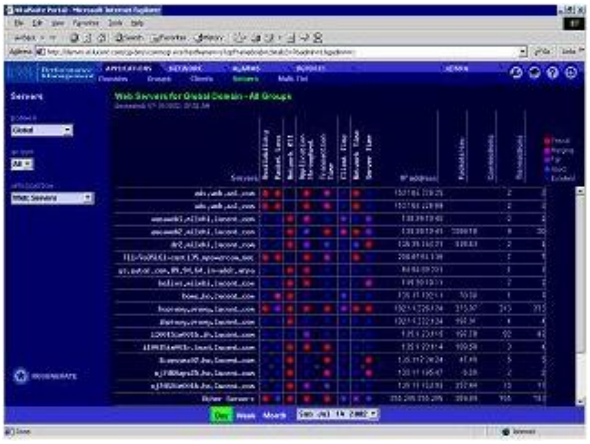
P4's portal delivers segmented information based on user preferences. These preferences are under the control of the specific user and are password protected to ensure security. This approach allows full utilization of the platform at all levels of the enterprise so that the NASM system can truly become predictive and integrated into multiple business processes.

Devices and Network Elements

Support personnel and network planners require information relating to the lowest levels of the network and application infrastructure. In addition, an organization needs discipline in its internal controls processes to ensure smooth operations and to avoid self-inflicted outages. Titan provides comprehensive management capabilities to accomplish these goals.

Real-Time Status by Device

Support personnel can quickly access information about a device in response to a trouble ticket or as part of standard maintenance procedures. Devices can be reset or updated quickly through a common process and interface.



Device Inventory And Network Topology

Network analysts and planners have a common need to inventory network assets. This capability allows centralized, proactive management of firmware revision levels, equipment service lives, and preparation of capital budgets.

Change Management Request And Status

Change control, or lack thereof is the primary reason for self-inflicted network outages. Typically the result of good intentions that were not cross coordinated with other areas of the network management team. A NASM platform that centralizes change requests and employs policy-based management can eliminate outages while smoothing the implementation of new services and technology.

Comprehensive Reporting

Trouble Tickets Management

The inclusion of automated alarm generation and event correlation in a NASM platform allows the number of tickets to be minimized. Those tickets that are created need to be reported to a responsible authority for resolution. A simple, centralized interface that allows status, closure actions and time to resolve statistics to be recorded is core to the viability of any NASM system.

Alarm Status

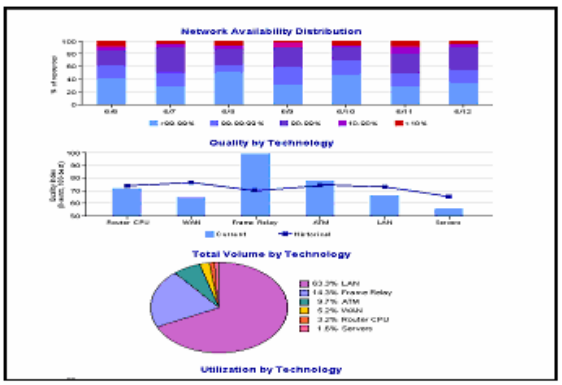
Performance threshold alarms are the first line of defense in establishing a proactive rather than reactive approach to NASM. Alarms are generated when a specific threshold is or is about to be exceeded. Alarms do not necessarily mean that a problem exists. In fact alarms should be used to alert support personnel to impending issues so that adjustments can be made prior to a failure.

Server Performance

Business processes run on servers. The network that underlies the servers acts as the pipe through which business information flows. NASM systems therefore need to be able to measure and alarm on specific statistics that enable analysts and technicians to monitor the health of the supported business processes. The ability to perform server performance management is especially critical in situations where servers are not housed in an enterprise data center.

Real-Time And Historic Performance Reporting

Business Unit Managers, CIO's and IT Management need to be able to view the network and systems as a cohesive whole. The questions that are relevant to their effectiveness relate to how well a business process is performing, and what areas of the network infrastructure need improvement and why? A NASM system that provides performance statistics based on business metrics is essential to achieving integration of systems with business planning.



Administrative Management

Customer Contact Information/Notification

IT is a dynamic business with frequent changes in responsibility and personnel. A simple interface that allows changes to customer contact and notification hierarchies is necessary to ensure missed communications do not lengthen troubleshooting or issue resolution time frames.

P4 Policies and Procedures

Support policies, notification procedures, user configuration processes, security policies and other general information relating to the operation of the system need to be readily accessible. Making these functions easily available ensures that information flows to those that need it and that only the information relevant to a given function is provided.

Delivery Methodology

P4's delivery model provides remote monitoring and management services from our Global Enterprise Management Center in Herndon, VA. Our industry leading Information Technology management capabilities are augmented by exceptionally talented people and disciplined project management guided by IT Service Management Best Practices (ITSM). P4 remote management capabilities are also augmented by on-site support resources as necessary, on customer premises or third party data centers, to support today's complex business objectives. P4 leverages Titan™, our Intelligent Management Platform, to provide top-to-bottom visibility and end-to-end control over an enterprise's entire infrastructure. To insure the highest availability and most secure infrastructures, P4 organizes skilled resources into Performance Teams, who are selected Information Technology experts versed in solving application, network, database and operating system management problems, designated to support your company. On a 24x7 basis, a combination of our Global Enterprise Management Center personnel and your designated Performance Team work to monitor, manage, respond and resolve all activities associated with providing optimized application performance.

P4 has packaged the experience of our technical and management staff into three levels of solutions ranging from our Optimization, Managed IT and Managed Communications. These solutions are provided to customers through a combination of strategic consulting, network solutions and performance management to ensure high availability of business applications and communication networks.

Optimization Services

P4 provides professional services in the form of Performance Gap Assessments that identify areas to improve performance, capacity, reliability, and manageability of the entire application infrastructure. Many customers require these services in order to ensure the engineering design parameters of their infrastructure match the stated business requirements. Our theory is that no matter how well managed an application is, a poorly designed infrastructure will reduce availability and decrease performance. The same is true of the relationship between the production application and its database. P4 provides performance tuning services to improve application performance and transaction success rates.

P4solve℠ – IT Management Solution

P4solve℠, our IT Management Solution, proactively manages the performance of your application, database, network and systems infrastructure by identifying potential problem thresholds that alert P4's highly skilled operations staff. Our Titan™ Intelligent Performance Platform provides automated problem identification, diagnostics and resolution for maximum application and infrastructure availability. P4 | Vu℠, our secure Web accessible dashboard provides a customizable window into your operations, providing a personalized view on virtually every aspect of your network, systems and applications performance.

P4voice℠ – Managed Communication Solution

P4voice℠, our enterprise VoIP Gateway Service, is a carrier alternative or business continuity solution that provides leading interoperability, PSTN quality and highly secure global termination for those companies who have already deployed VoIP solutions intra-company and wish to interface with the Public Switched Telephone Network (PSTN) without the need to deploy expensive equipment of additional telecom expenses.

Summary

The importance of a comprehensive NASM capability has reached a level that it cannot be relegated to simply reacting to device status and alarms. The security risks are too great, the infrastructure is too widely distributed and the impact of an outage on mission critical business processes is too costly. Enterprises today need to closely examine how they are deploying IT assets and find ways to focus on their core business while retaining an ability to adopt new technologies that have positive business impact. Incorporating NASM into the business at all levels to provide critical operational benefits is one way to improve overall performance and stay ahead of emerging trends and opportunities. P4 has assembled the expertise, tools and processes to help you achieve the next level of business operations.

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