



Best Practices For Availability and Performance Management

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Executive Summary

Think of the IT department as having two primary functions. IT is responsible for technology-driven initiatives to create new revenue opportunities, automate processes, and save money. This is IT's sexy side, the other is much more sedate. IT is also responsible for keeping the trains running on time – i.e. making sure applications are available and delivering acceptable performance to business users.

This report is about availability and performance management, part of the non-sexy side of IT but a key to IT operations excellence. Without these disciplines, the whiz-bang side of IT is worthless. The report makes the following conclusions:

- **IT suffers from some common organizational, process, and technology problems.** These issues limit availability and performance management resulting in lost revenue, poor user productivity, and costly technology fixes.
- **Availability and performance management have three main goals.** IT should focus its effort on saving money, improving services, and automating processes.
- **Availability and performance management must be based on business priorities.** Budgets, operational processes, organizational considerations, and technology selection should be based upon business impact. This will help IT develop priorities while offering the best support for critical business services.
- **Organizational and process improvements are most important.** Software is a tool, not a savior. To achieve desired results, IT must accompany software with knowledgeable staff and effective procedures. IT should select software to deliver on its 3 main goals (stated above) for high priority business services.

IT Take away: CIOs must recognize that availability and performance management are crucial for servicing the technology needs of the enterprise. To improve in these areas, IT executives must:

1. **Ask for money.** The economic slowdown and lack of new business initiatives mean that now is the perfect time to get the IT house in order. CIOs should sponsor availability and performance management projects and procure needed funding from finance. Make sure the CFO understands the project's importance, ROI goals, and success metrics.
2. **Empower your management team.** VP-level personnel should manage these projects. Give them objectives, support, resources, and rewards to ensure success.
3. **Measure, measure, measure.** Availability and performance results can be subtle. Baseline your starting points, measure improvements, and communicate results.

Business Take away: Availability and performance management of business systems ensures that users can get their work done and remain productive and happy. In order to support the availability and performance management effort, business managers must:

1. **Understand the tradeoffs and costs.** Availability and performance management can require costly equipment and IT skills. To balance needs, costs, and resources, business managers must truly assess their IT requirements against other business and corporate priorities and be willing to make tradeoffs when necessary.
2. **Include IT operations in planning sessions.** Business managers that want their applications to have the highest possible availability and performance will demand that IT build manageability into applications during the design and implementation process.
3. **Outline needs and expect communication of results.** Once business managers understand requirements, they should negotiate availability and performance terms and conditions with CIOs. In return, they should expect reports and metrics that audit these agreements. Most IT shops aren't ready for service level management but this exercise will prepare both sides for future IT/business contracts.

Situation Analysis: Availability and Performance Management Issues

In spite of improved tools, new management technology standards, and many years of distributed computing, IT remains way behind when it comes to availability and performance management. Why? Systemic organizational, process, and technology problems restrict forward progress (See Figure 1).

Figure 1: Availability and Performance Management Problems



People

- Organized around technology, not business applications
- All events get the same treatment regardless of business impact
- Limited communications between technology groups



Process

- Minimal upfront planning
- Early warning signs go unheeded
- Lack of preparation in the NOC



Management Software

- Tools manage functional technology, not business services
- Management data gives an incomplete picture
- Tools are not supported by processes

Source: Hype-Free Consulting

IT Organization: A Technology Focus Impedes Overall Progress

IT departments are organized around functional technologies like networks, applications, and security, while end-users are grouped around business functions like finance, sales, and manufacturing. The difference here may not seem important, but it puts IT at cross-purposes with the business. Why?

- **IT crews focus on technology rather than business goals.** Functional group are inspired and compensated by technology-focused metrics whether they help the business or not. Consequently, maintaining application availability and performance takes a back seat to more myopic goals. When problems arise, finger pointing replaces teamwork and the business suffers.

- **All technology outages are treated equally.** One director of IT operations put it this way, “when the event management system detects a technology outages, we have no idea which business services are affected. The only way we can tell whether it’s a critical system is when the help desk calls start to roll in.” Without the knowledge of what’s effected, all problems get equal treatment regardless of whether they impact mission-critical or support systems.

With technology groups constantly looking inward, departmental communications suffers as well. This exacerbates problems, as a fragmented IT organization can’t anticipate and plan the impact of changes on their domains if they don’t know about them.

Processes: Availability And Performance Remain An Afterthought

Although IT is integrated into most business activities, availability and performance process are relegated to the back burner and handled in a reactive fashion. This laissez faire attitude produces negative results as:

- **Minimal upfront planning impedes manageability.** Business managers and IT engineers tend to select and implement new business applications in a vacuum without considering manageability. One operations manager proclaimed, “the engineers and business guys throw apps over the wall and expect operations to manage them. We could deliver much better results if we designed availability and performance management into the systems upfront.”
- **Early warning signs go unheeded.** Network operators spend their days on critical events, but no staff or time is dedicated to proactive analysis of non-critical alerts. By ignoring these early warning signs, IT simply postpones problem resolution until it results in more costly service interruptions.
- **Lack of preparation in the NOC makes every event a fire drill.** Poor training, limited skills, and sparse historical information means every problem is immediately escalated to Level 1 support. This process breakdown stresses the system to the brink of collapse. Even scarier, the fate of critical systems is dependent upon the availability and brainpower of a few key individuals.

While availability suffers because of process breakdown, performance monitoring is virtually ignored. This is a mistake as performance issues can impact the business. For example, an application may appear available in the NOC while poor performance is greatly impeding productivity or revenue. To address the problem, IT is forced to take immediate – and expensive actions.

Software Tools: Limited By Scope And Preparation

When organizations and processes are broken, lots of IT managers run to software management tools to save the day. Many management tools implementations result in failure however because:

- **Tools manage functional technologies, not business objectives.** Functional technology groups purchase management tools, for their own purposes. This may help reduce costs or improve in-group metrics but has little – if any—visible impact on business services.
- **Management data provides a piecemeal view.** Management data follow the functional model presenting a picture that is divided into discrete buckets. This is a real showstopper. Even if IT wants a complete look at the technologies that make up business services, it can take months to reformat and integrated the data into a useable format.
- **Operational processes don't accompany management software.** Once implemented, sophisticated management tools spit out loads of reports, graphs, and data, but if IT doesn't know how to interpret or act upon the information presented, it can't deliver any value. These cases are seen as a costly, frustrating, and visible failure.

Management software is too often looked at as a complete solution, not a tool. A VP of network operations put it bluntly when he said, “Let’s face it, it’s easier to buy a tool than to actually build an organization and develop processes to manage complex technology and really solve the problem.”

Best Practices For Availability And Performance Management

To achieve best practices for availability and performance management, IT needs to address organizational, process, and technology issues. Before proceeding however, it is important to start with some perspective. Availability and performance management should always share three common objectives:

1. **Save the company money.** IT managers should start by identifying clear ROI goals and defining areas in which they will save the company money.
2. **Provide better service.** Ultimately, availability and performance should be measured by end-user productivity and satisfaction. IT managers must assess technology and user perspectives before it can measure progress.
3. **Automate processes.** IT managers should document and study current availability and performance management practices and find areas where process automation saves money or improves service.

Once objectives are in place, IT must prioritize its activities to deliver a high payback to the business. Hype-Free suggests that there are four major steps toward achieving success:

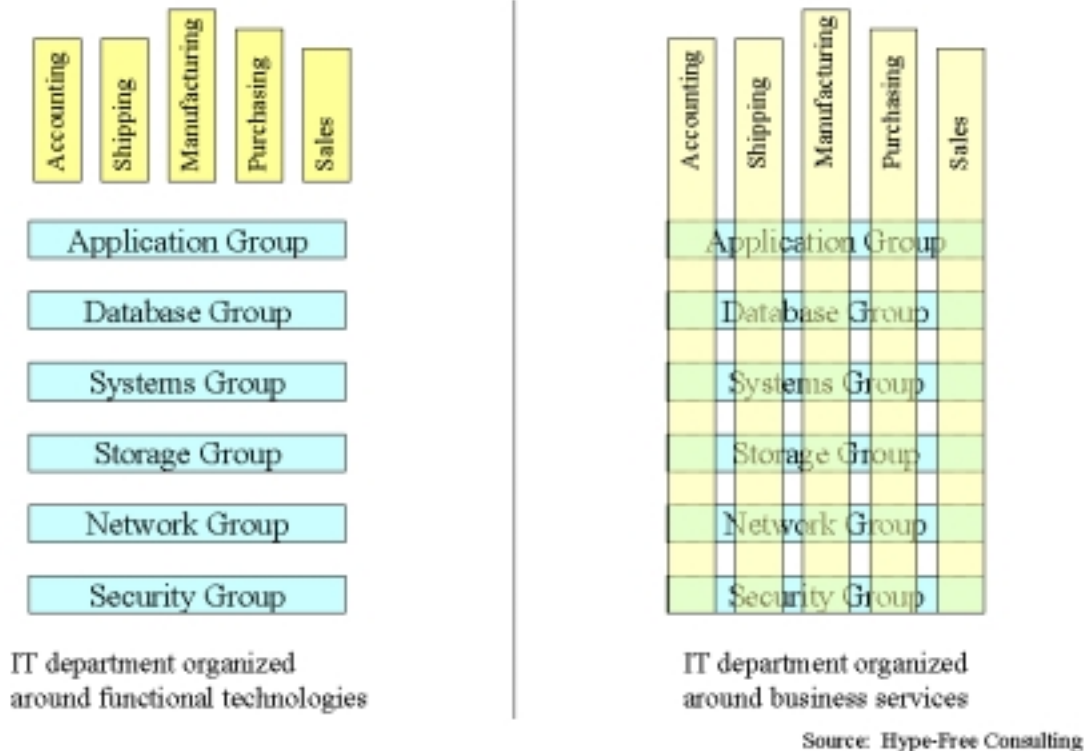
1. Organize IT around business services.
2. Match management activity with business requirements.
3. Provide a solid baseline and foundation.
4. Design manageability into applications.

Organizing IT Around Business Services

To improve service, IT must focus the organization on business services rather than functional technologies. This does not mean a massive reorganization; rather it entails creating groups from within the functional domains who are responsible for the availability and performance management of business services (see Figure 2). To create these business service teams, IT must:

- **Choose senior IT managers to lead each team.** Senior people from the applications and networking areas should lead each of the business service teams. This combination can provide advanced skills and knowledge of an end-to-end business service from the application server to the user desktop.
- **Staff the team with generalists and specialists.** Co-managers should be supplemented with staff from the applications (i.e. applications, database, server, storage), network, and security areas. Generalists' role on the team is to gather information and report on all the components that make up a business service

Figure 2: Functional Technology vs. Business Service Organization



chain. Specialists with deeper knowledge of individual components and technologies can be called upon for data interpretation, design engineering, troubleshooting, and problem resolution.

- **Link group performance to compensation goals.** Since availability and performance management of business services will improve the bottom line, smart IT managers will compensate business service teams based upon measurable improvements. Complement financial benefits with visibility across the company, not just within IT.

Business service teams should meet often to review performance and availability metrics, discuss issues and upcoming plans, and go through change management schedules. User participation should be encouraged. Meeting minutes should be captured, summarized, and communicated to the IT organization, business management and end-users.

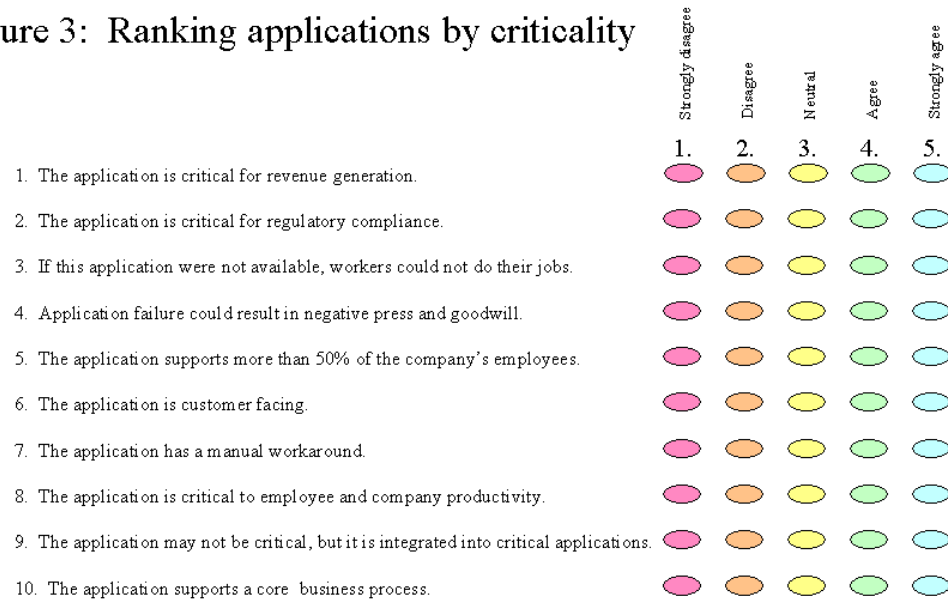
Matching Management Activity With Business Requirements

It would be cost prohibitive to try and deliver 7 by 24 availability and ‘wire speed’ performance to all users for every application, but some critical business services demand this type of care. To deliver appropriate levels of availability and performance, IT must

rate the application portfolio in terms of its criticality to the business. The ranking of each business service will determine staffing, budget, and operations procedures.

A rating system should be crafted that provides weighted responses to a series of questions (see Figure 3). By rating each application in this manner, IT should be able to place all business services into three categories (see Figure 4):

Figure 3: Ranking applications by criticality



Results:
 Score 41-50 = Critical Business System
 Score 31-40 = Critical Support System
 Score >31 = Non-critical Support System

Source: Hype-Free Consulting

1. **Critical business services.** These systems require the highest levels of availability and performance possible as service interruption can cost \$millions per hour in lost revenue and create a public relations nightmare. Critical business services demand the most skilled support teams that can manage complex high-availability technologies like server clusters, RAID storage, and redundant networks.
2. **Critical support services.** These are important services for employee productivity, but only have an indirect impact on revenue. Critical support services won't require the degree of high-availability components that critical business services do, but availability and performance goals should remain high to maintain peak productivity and employee morale. Team members can participate on 2-3 teams each depending upon company size.

Figure 4: Ranking applications by criticality

| | Availability Requirement | Performance Requirement | Service team leaders and members | # of teams per staff | Threshold Levels | Escalation Process | Budget Requirement |
|------------------------------------|--------------------------|-------------------------|---|------------------------------------|------------------|---|-------------------------------|
| Critical Business Systems | 99.999% | Highest Possible | VP or senior directors from apps. and network ops Generalists and specialists for support | 1 | 60% | Immediate | 40%+ for management and ops |
| Critical Support Systems | 99.9% | High | Sr. director or director from apps. and network ops Generalists and specialists for support. | 2-3 depending upon size of company | 70% | Troubleshoot in network ops before escalation | 30% for management and ops |
| Non-Critical Support System | 99% | Moderate | Director from network ops Generalist for support. Specialist on call. | 3-5 depending upon size of company | 80% | Troubleshoot in network ops before escalation | 15-20% for management and ops |

Source: Hype-Free Consulting

3. **Non-critical support services.** These services support business processes but manual workarounds will suffice if they are unavailable. Non-critical support services should feature high availability and performance, but don't require the same level of staffing as the others. Middle managers and junior employees should be able to participate in 3-5 non-critical operational services teams.

With these three categories and a rating system in place, it will be far easier for business managers and IT to understand requirements, staffing, and budgets. This guideline will also help IT managers organize their departments, train and grow employees, and get their groups more closely aligned to the business.

Providing A Solid Baseline and Foundation

A comprehensive availability and performance management effort should begin with a baseline of existing business services. This includes an understanding of the current environment and adoption of standard metrics to gauge progress. There are four main components to this task:

1. **Documenting the service chain.** The service chain is defined as all of the technology components between an application server and an end user. Gathering and organizing

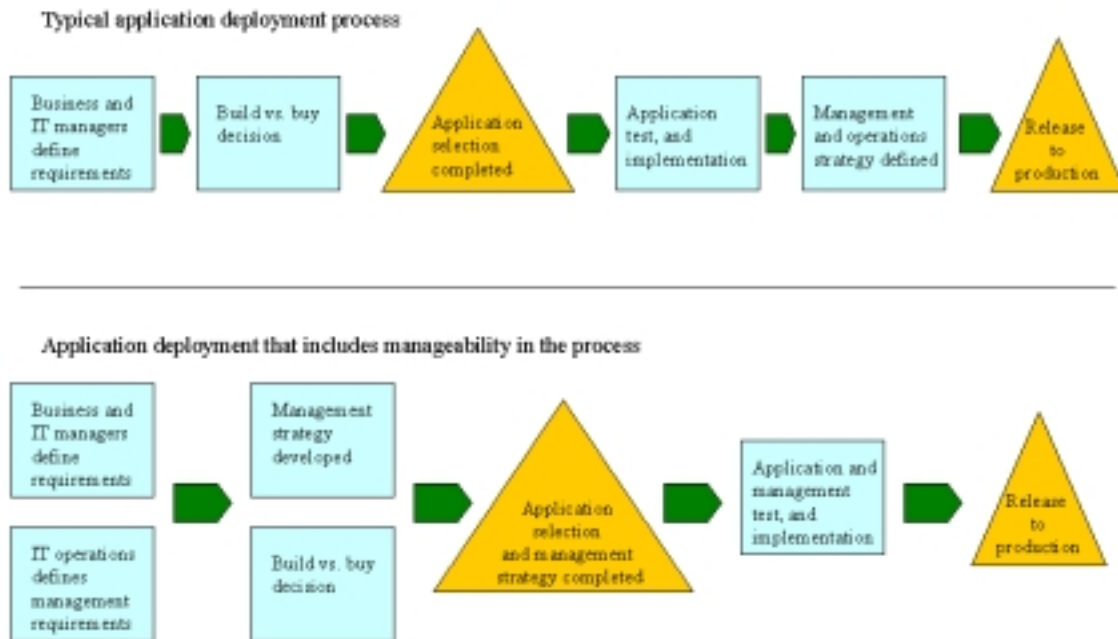
this information may be as minimal as exporting data from one tool to another, or it may involve painful manual processes, but regardless of the effort, it is an important to build and maintain accurate records of business service chains. This information will be crucial for Root Cause Analysis (RCA) of availability and performance issues.

2. **Defining data standards.** The degree of difficulty associated with this task depends upon existing management tools and IT discipline. At the very least, IT should capture standard data on resource utilization, latency, throughput, and error logs for all devices in a business service chain.
3. **Set standard thresholds.** Use the service categories (above) to put some structure around all thresholds. Critical business service chain technologies should have a maximum threshold of 60%; critical support services should have a maximum threshold of 70%, non-critical support services can have a threshold of 80%. When thresholds are exceeded, the event monitoring system should receive an immediate alert and network operators should have a detailed process for action and problem escalation.
4. **Emulate user perspectives.** Remember, that end users are the ultimate judge and jury of IT services. To understand their viewpoints, implement desktop monitoring system (approximately \$2000-\$5000 each plus the cost of the PC) and place one of these agents on a desktop that represent each end-user location. In other words, if you have 5 locations, you will need 5 dedicated systems. Once you've installed these systems and measured performance survey end users to take their temperature on service satisfaction. These baselines will allow you to measure future progress.

Designing Manageability Into Applications

To become more proactive and effective at managing business services, availability and performance management can no longer remain an afterthought. This means including a cross-functional team of IT operations experts into the application development process from start to finish (see Figure 5). These management gurus can then look for areas to add management standards like the Application Resource Management (ARM) API into homegrown applications, or select management-savvy equipment vendors like HP and Cisco that instrument advanced functionality and integration capabilities into their gear.

Figure 5: Building Management Into Applications



Source: Hype-Free Consulting

A Successful Strategy For Availability Management

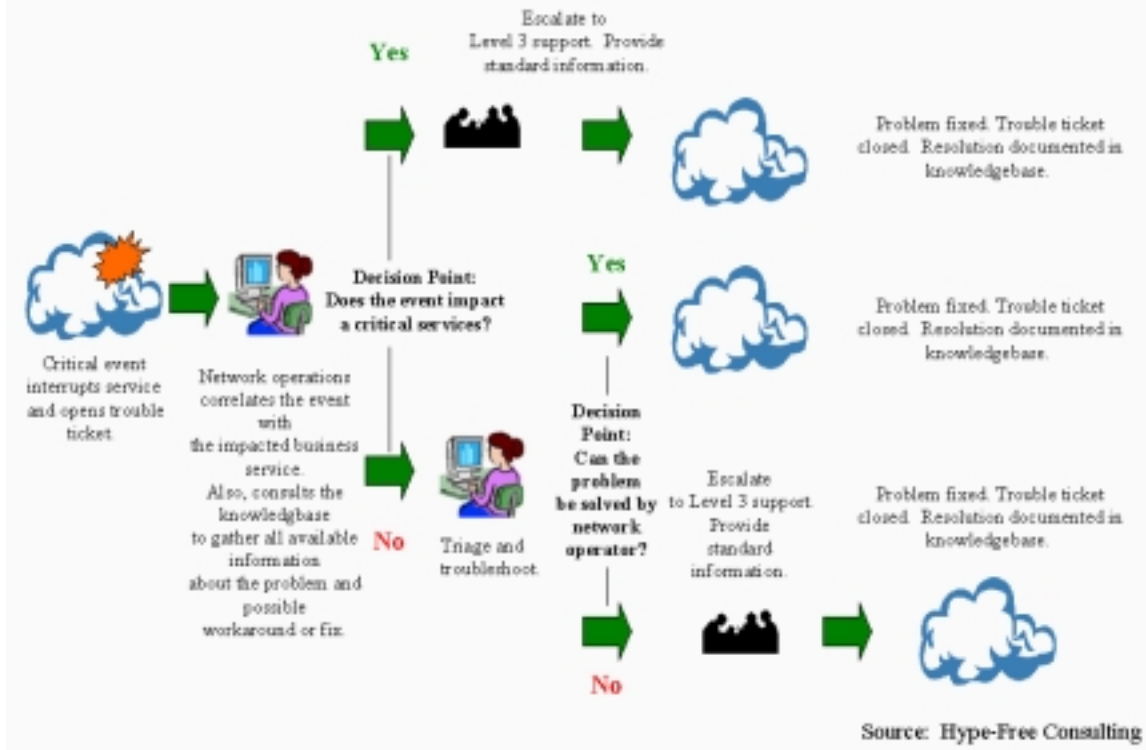
Availability management doesn't have to be characterized by inaccurate information, poorly trained staff, and undefined escalation procedures this way. With some simple steps, IT managers can transform this chaos into a systematic procedure (see Figure 6).

Availability Should Be Anchored By Network Operations

Whether it's an angry phone call from a user or an automated trouble ticket opened by the event monitoring system, the Network Operations Center (NOC) is in the center of every issue. Because of this situation, network operations must lead the effort to diagnose and fix problems. Even in a distributed enterprise, IT should centralize event monitoring and level 1 & 2 support but work with distributed engineers for in-depth analysis and actual hands-on repairs. To execute, network operations needs:

1. **Clear and concise messages and data.** Geeky engineering messages like value = 0 don't mean anything to human beings. This information must be translated into plain English so that network operators can interpret and act upon it. This simple step will help junior operators identify and triage

Figure 6: Availability Management Process



problem more easily – without the need for immediate escalation.

2. **A way to link technical events and business services.** Operations staff requires an easy and immediate way to understand the business impact of a component failure. This information should be included within alerts or be easily accessible through on-line resources or physical documentation. Once an event is mapped to a business service, operators will know whether they should continue to fix the problem themselves or get immediate help.
3. **A troubleshooting knowledgebase.** Network operators need all pertinent information available that can help them solve problems. This goes beyond equipment documentation, a troubleshooting knowledgebase should include data about assets, configurations, maintenance contracts, and equipment history. IT should also mandate that the knowledgebase be updated with clear information about past problems. A well-organized, accurate knowledgebase can take the guesswork out of problem resolution and minimize downtime.
4. **A detailed escalation process.** When network operators need additional help, there must be a standard process to identify the right resource, transition the problem to level 1 support, and transfer knowledge including error codes, impacted service, previous diagnostic attempts, and current status. By

standardizing the escalation process, IT can minimize time consuming transition phases, and jump right into problem resolution.

5. **Creative ways to hire, train, and grow network operators.** In poorly managed operations centers, NOC jobs can be high stress, dead-end positions prone to low morale, high burnout, and constant turnover. To overcome this, smart CIOs must make the NOC part of a 'tour of duty.' Junior network engineers should spend 6 months in the NOC while senior network engineers take NOC shifts a few times a month. Application staff should sit in at least once a month. Operators should be offered a career path to network engineering after a year of service in the NOC. These moves will create a good environment for cross training and knowledge transfer while building a culture that includes manageability in its network and application design criteria.

These five steps should improve network operators' ability to isolate and solve problems once they occur. To address future concerns, IT should develop proactive processes to fix things before they break. This involves an upfront expense, but can pay for itself over time (See Figure 7). Non-critical alerts should be correlated with the business service they influence. Services teams should analyze these and design workarounds before problems occurs. All non-critical alerts should also be posted in the knowledgebase with information that refers to problem characteristics, possible causes, impact, and fixes.

Figure 7: Cost of proactive management

| | |
|--|--------------|
| Cost of downtime: | |
| High-end critical business service cost of downtime per hour | \$4,000,000 |
| Typical critical business service cost of downtime per hour | \$500,000 |
| Typical critical support service cost of downtime per hour | \$75,000 |
| Personnel costs: | |
| Fully-burdened cost of Senior Network Engineer to do proactive management of non-critical events | \$200,000 |
| Number of minutes of downtime avoided needed to cover the cost of engineers: | |
| High-end critical business service | 3 minutes |
| Typical critical business service | 24 minutes |
| Typical critical support service | 160 minutes |
| Cost savings of proactive management if it can raise availability from 99.9% to 99.99% | |
| High-end critical business service | \$31,536,158 |
| Typical critical business service | \$3,941,842 |
| Typical critical support service | \$591,300 |

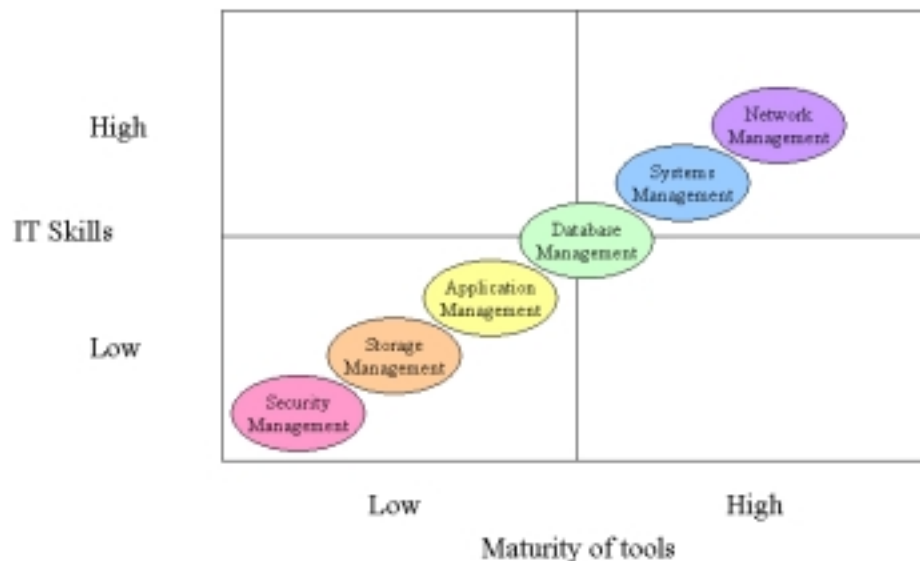
Source: Hype-Free Consulting

Finally, it is important that the network operations team communicates both inside and outside the NOC. Diagnostic processes and problem resolution must be captured accurately in the trouble ticketing system and any lessons learned must be added to the knowledgebase. User should receive immediate notice about a problem via voicemail or e-mail. Regular reports to IT and business managers should outline both service issues and successes. Communications like these will greatly enhance IT training, planning, and morale as they build a bridge between IT, business units, and end-users.

A Successful Strategy For Performance Management

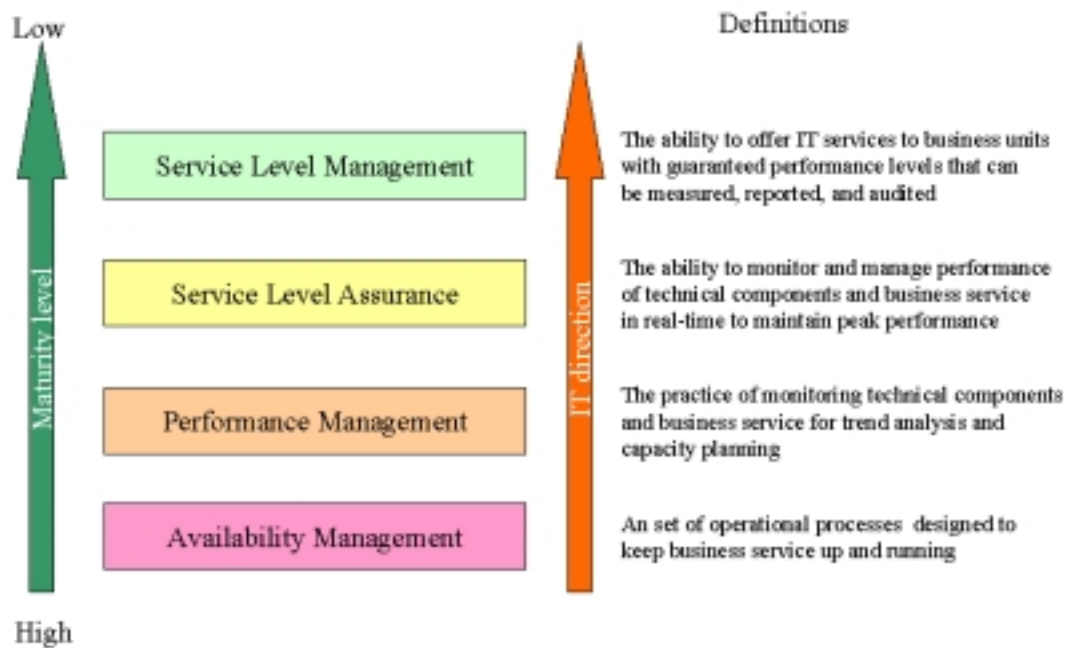
IT has been monitoring performance of components and functional technologies for years, but performance management across business services is a relatively new task that combines management domains in various states of maturity (see Figure 8). Somehow, IT must develop performance management processes and expertise today to anticipate hot spots and do effective capacity planning. Performance management mastery can help business services deliver maximum value while allowing IT to make ‘just in time’ purchases, avoid infrastructure surprises, and control capital expenses. IT managers should set a strategic goal toward service level management (see Figure 9).

Figure 8: Maturity of management disciplines



Source: Hype-Free Consulting

Figure 9: Management definitions and directions



Source: Hype-Free Consulting

Business Service Groups Will Lead The Way

Extremely sophisticated shops with flat network architectures may choose to anchor performance management within network operations and purchase tools based upon the RMON standard. RMON can break down network traffic by application protocols, which can provide a good basis to judge performance. On the negative side, RMON tools are expensive, complex, and not effective for hierarchical networks. RMON is also limited in its monitoring capabilities on its own – RMON may see Oracle traffic, but it won't be able to distinguish one Oracle database from another.

In the absence of a cross-functional tool and a central organization, IT has no choice but to delegate performance management to the business service teams. These groups must:

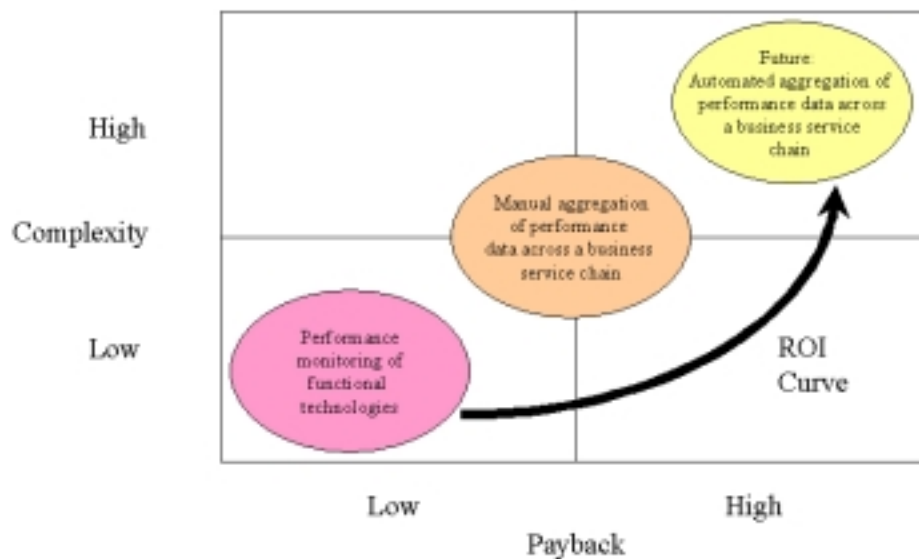
- **Look at standard data across the service chain.** To gain value at an aggregate level, Service teams should review common information like utilization, throughput, latency, and error rates across the end-to-end service chain. These along with user-based tools that measure round-trip performance will provide metrics to derive an in-depth understanding of performance at all times.
- **Analyze non-critical alerts.** Just as in availability, non-critical alerts can be signs of impending trouble. Examine these alerts as they relate to performance metrics like error rates and thresholds. Develop standard actions

– like system upgrades or disk defragmentation – based upon the analysis of these messages.

- **Understand cross-functional impact of performance hits.** The business service team must understand how an event like an increase in database transactions or web traffic impacts each component and the entire business service. These ‘what if’ exercises can help IT make adjustments as business conditions change. Information should be posted in the knowledgebase to help network operations diagnose and resolve performance-related alerts like ‘threshold exceeded.’

This team-based approach will provide effective performance management today and prepare the enterprise for sophisticated business service management tools from BMC, Concord Communications, and Micromuse as they arrive (see Figure 10).

Figure 10: Performance management payback



Source: Hype-Free Consulting

A Pragmatic Approach To Management Software

When it comes to management software, IT must balance the needs of functional technology groups with those of the enterprise. To bring these two worlds together, companies should:

- **Look at tools needs across business services.** IT managers should define management software purchasing and implementation strategies to meet the needs and budgets of business services. By focusing on the unique needs of each business service category, IT can define requirements, qualify vendors, and streamline purchasing cycles more easily. Management software for critical business services will have high costs and long implementation cycles, but these burdens will be offset by the requirements of less critical business services.
- **Define standards for integration.** To get a comprehensive picture, business service managers should always strive to define and integrate common management data from across business service chains. Time consuming and complex application and UI integration should be approached with caution. For most shops, application integration at the SNMP trap and event level will be sufficient. Except for basic web-based technologies, UI integration is not worth the effort.
- **Accompany tools with the right processes.** Make sure that you know what the management tool is telling you and what actions you should take based upon the interpretation of that information. Remember that the goal is to improve service, lower costs, or automate processes – make sure that management data and subsequent processes help you achieve these objectives.
- **Make your vendor an ROI partner.** The tools vendor should have skin in the game too. Make sure that you mutually define ROI metrics and timeframes. Match payment terms with these goals. This will ensure that your vendors are actively helping you meet them.

By following these rules, IT should see improved availability, lower management software budgets, and superior data for performance analysis.

Hidden Costs And Considerations

Best practices for availability and performance management have many dependencies throughout the organization. To synchronize these activities and truly improve business service levels IT managers must:

- **Coordinate IT operations and security team activities.** Security efforts continue to grow each quarter, and like network operations, security people deal with streams of events and are often called upon to take immediate action. A lack of coordination between security and network operations can impact business services and prolong outages. Include security staff members in the business service teams to alleviate these problems. You will get an added benefit by consolidating network and application security in the process.
- **Make change management processes rock solid.** If configuration and asset data is not accurate, the availability and performance management processes fall apart.

To keep the system running, make sure that the entire IT team adheres to a strict procedures that includes data input, knowledgebase updates, and document management.

- **Demand management data integration of telco providers.** When it comes to management of your private lines and network services, don't settle for written reports or web-based GUI management front-ends. Make sure that telco providers can pass you management data in a format that you define. This information will fill in the blind spots of your end-to-end view.
- **Capture homegrown Intellectual Property (IP).** It is not atypical to find that the most important assets in IT are people's brains. Why? Many can diagnose and troubleshoot problems based upon their experience while others write their own scripts and software utilities to enhance management tools. Unlike hardware and software, these assets can walk out the door and never return. It is important to document and maintain this knowledge before it's too late.
- **Anticipate high storage costs for improved management.** Maintaining performance data can quickly fill a lot of disk drives. For example, if each component in a 100-device network generates 25 messages of 15kb per hour, this adds approximately 27GB of new data per month. This example pales in comparison to a real enterprise network. Storage is relatively cheap, but anticipating this requirement will greatly improve budgets and equipment cost.

Above all else, IT managers must remember that critical business and operational services that touch thousands of distributed users and absolutely can't fail will be difficult to manage regardless of IT's actions. Smart CIOs will recognize this reality and match complexity with brute force. This means high availability technologies like server clusters, remote mirroring, and redundant networks, and over engineered solutions to guarantee peak performance. Start with brute force solutions today and add management analysis and expertise over time as your experience and confidence grows.

Metrics For Success

Availability and performance management should be measured at three levels: 1. Business service level, 2) functional technology level, and 3) individual component level. These three areas paint a complete picture of the user experience and IT functions and deliver metrics for business and IT managers. Additional metrics are broken down by availability and performance.

Availability Metrics

Before defining availability metrics, IT should estimate the cost of downtime for each business service. This can range from millions of dollars for critical business services to

thousands of dollars for non-critical operational services. Once this figure is established, IT can put a cost estimate on these additional metrics:

1. **Mean Time To Repair (MTTR).** Measuring MTTR is extremely helpful to isolate process problems. For example, if diagnosing a problem takes 70% of the time to repair, there is probably a weakness within network operations, the knowledgebase, or problem escalation. With the proper procedures around availability management MTTR should decrease until it reaches a steady state for all but the most critical and unanticipated problems like natural disasters.
2. **Mean Time Between Failure (MTBF).** Monitoring MTBF can help IT spot problem equipment or procedures. This can help IT replace vendors with quality issues or identify skills and process shortfalls. When an individual database continuously exceeds its tablespace thresholds, there may be a DBA who needs help. Watching MTBF will also help IT see how proactive management leads to greater uptime and lower costs.
3. **Trouble tickets and critical events per month.** IT managers should get a baseline number here by averaging out the last six months while discounting unique changes like the implementation of a new production system. Measure any changes over time as the business service team develops processes, proactively triages non-critical events, and communicates its activities to the user population. You should see a precipitous drop over time.
4. **Network operations job satisfaction.** Measure job satisfaction before you change anything. As you implement new processes and tools, measure job satisfaction henceforth at least once per quarter to monitor improvements. Review employee attrition records to see if availability and performance management improvements lead to greater staff retention.

Performance Metrics

Performance metrics are less concrete than availability. Nevertheless, IT can gauge progress by measuring:

1. **Performance related help desk calls.** Follow the same process as availability specifically for performance related calls.
2. **User and customer satisfaction.** Survey your users and customer base and continuously measure results. These inspections should be designed for many purposes, but business service performance must always be included to judge progress over time.
3. **User productivity.** You should be able to analyze a relationship between business service performance and user productivity. For example, did a recent system

upgrade help the equities group execute more trades? When an IP router exceeded its threshold did the call center activity slow down? This exercise will truly help IT work with business units more closely.

4. **Capital expense savings.** Excellent performance management should provide information that allows IT to enhance control of capital expenditures through 'just-in-time' technology purchases. These benefits should not only help in budget management, they also create longer purchasing cycles, which can help push vendors for better pricing. To understand progress here, measure budgetary fluctuations and equipment discounts on a quarterly basis.

Future Considerations

Like most aspects of IT, availability and performance management will become more complicated with technology innovation. IT managers must anticipate changes as:

- **Web services require management of distributed systems.** Next-generation business applications will be built using web services technologies like IBM Websphere, Microsoft .NET, or Sun Microsystems' SunONE. This change will make managing business services more distributed and dynamic. IT managers must stay on top of business requirements, application technology innovation, and new tools from BMC, Dirig, or Loudcloud that manage web platforms and integrate into existing network management platforms.
- **Heavy content presents a latency challenge.** Slowly but surely, more non-structured content like audio and video will be added to applications for customer service, training, and collaboration. Network latency can render these systems useless. Rather than default to expensive bandwidth, IT should address network latency by monitoring end-to-end performance of the business service chain to pinpoint and address problems. This effort will keep applications useful while easing capital expenses.
- **More specialized appliances add management difficulty.** Appliances excel at specific functionality but also add architectural and management complexity. To constrain management problems, IT managers should select appliances that adhere to standards like SNMP and CIM to report status and problems up to higher-level management tools. It is also prudent to make sure that appliance vendors have a local presence and proven support before implementing appliances into critical services.
- **Wireless technologies changes application design and delivery.** Wireless applications will revolutionize applications for inventory management, security, and customer service but the scale and distributed nature of wireless applications can also create availability and performance management headache. To keep these applications productive from the start, IT should instrument wireless

infrastructure for manageability and over engineer solutions.

Final Word

It is ironic that while IT is credited with driving of massive advances in productivity, quality, and cost management, internal IT shops are run so haphazardly.

CIOs should strive to have IT emulate a manufacturing operation where mature processes and organizational structures exist for forecasting, inventory management, production line availability, and quality control. Availability and performance management are central activities toward this end.

In the late 1990s a number of service providers (hosting service providers, application service providers, storage service providers, etc.) entered the market proclaiming that their services would gain traction because IT is not a core skill to most businesses. History has already proven that these upstarts were wrong. IT is core to nearly every enterprise business to drive strategic initiatives, service customers, and support employees. An investment in availability and performance management will go a long way to putting IT excellence on a par with any other business process in the company.

Like anything else, availability and performance management will require budget dollars and headcount. CEOs and financial managers must realize however that these are investments in the future and are critical to continued advances in productivity, cost efficiency, and revenue opportunities.

Market Analysis

Industry analysts claim that the market for availability and performance management tools is approximately \$2 billion growing at 15 % per year. These numbers do not take into related industry segments like account professional services vendors or Management Service Providers (MSPs) seeking to capitalize on this sizable and critical market.

Enterprise improvements in availability and performance management will influence the market as:

- **Solution selling becomes the rule.** Technology complexity and past failures will change the way IT approach availability and performance management. IT bosses will demand that management software vendors be active participants in the design, implementation, and on-going operations of their products. These requirements will be built into service contracts with stiff penalties for non-performance. Solution selling means that vendors like HP, IBM, and Candle that can combine professional services and management tools will prosper. Service shops like Callisma, Predictive Systems, Unisys and Thrupoint will benefit through partnerships and become instant takeover targets from vendors like BMC,

- CA, and Concord.
- **New opportunities for management middleware.** A lack of management standards continues to make it difficult for IT to integrate management data and tools. What's needed in the management space is an any-to-any translation package that automates this process. Vendors like Crossworlds and Orbix tried this in the application space with minimal impact, but the management industry is more insular and defined. Aprisma, Managed Objects and Opticom have some of this functionality today. The vendor that produces a management middleware bridge and signs channel and services partners has a green field opportunity.
 - **Tools vendors become more specialized.** Enterprise availability and performance management tools are extremely difficult to implement and today's economic conditions preclude big software purchases. Vendors like CA, Tivoli, and HP have already started to react to these trends by focusing on individual functional tools while providing product extensions for tools integration. Software vendors will create divisions complete with their own marketing budgets, field engineers, and salesforce to better address their customer needs. As this plays out, look for the big guys to divest low market share groups and focus on their strengths.
 - **Microsoft's impact grows.** Redmond's introduction of Microsoft Operations Manager (MOM) has already disrupted the market through its low pricing and knowledge of enterprise products like SQL Server, Active Directory, and Exchange. MOM's ubiquity will make it the operating system of management software for the Windows space as others seek to cooperate rather than compete. Look for management standards like WMI, CIM, and XML to gain in importance as the Microsoft effect influences management technologies across the industry.

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| Computer Associates | www.ca.com |
| Concord Communications | www.concord.com |
| Dirig Software | www.dirig.com |
| IBM/Tivoli | www.tivoli.com |
| Managed Objects | www.managedobjects.com |
| Micromuse | www.micromuse.com |
| Microsoft | www.microsoft.com |
| Netsolve, Inc. | www.netsolve.com |
| Opticom, Inc. | www.opticominc.com |
| Predictive Systems | www.predictive.com |
| Quallaby Corporation | www.quallaby.com |
| Riversoft | www.riversoft.com |
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| Treadstone71 | www.treadstone71.com |
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|------------------------------|--|
| Callisma, Inc. | www.callisma.com |
| Hewlett-Packard | www.hp.com |
| Netscout Systems, Inc. | www.netscout.com |
| Silverback Technologies | www.silverbacktech.com |
| System Management ARTS, Inc. | www.smarts.com |
| Unisys | www.unisys.com |

About Us:

Hype-Free IT is a back to basics approach to IT infrastructure and operations that:

Matches technology to business objectives. Technology initiatives should be implemented and measured based upon basic business goals like cutting costs, improving productivity, providing improved service, or driving new revenue. Hype-Free IT focuses on measurable business results that can be understood by both technology and business managers.

Focuses on simplicity, manageability, and service. Hype-Free IT means meeting budget objectives, project schedules, and service level agreements. This requires an infrastructure that lines up with IT skill sets, operations processes and procedures, and existing assets. This discipline also serves as a foundation for effective vendor management.

Puts significant emphasis on organization, skills, and individuals. To match business and IT goals successfully, IT managers must construct an appropriate organizational structure, bring together the right expertise, create a sense of urgency, and build an atmosphere with high morale and teamwork. The organization is always central to Hype-Free IT. The goal is to help CIOs manage, recruit, and motivate a staff that delivers high-impact business results.

About The Author:

Jon Oltsik is a founder and principal of Hype-Free Consulting. Prior to founding Hype-Free Consulting, Mr. Oltsik served as VP of Marketing & Strategy at GiantLoop Network where he managed all external marketing activities and drove the company's strategy and vision. Oltsik was also a Senior Analyst at Forrester Research where he covered a wide range of topics. In this role, he was frequently quoted in business journals including the Wall Street Journal, Business Week, and the New York Times. In 1997, Mr. Oltsik won a prestigious "best research" award for his breakthrough report "The Internet Computing Voyage." Mr. Oltsik has held additional marketing management positions at Epoch Systems, Clearpoint Research, and EMC Corporation. Oltsik has an MBA and BA degree from the University of Massachusetts, Amherst.

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