Point of View

Application Performance Management

A Holistic View

This paper is part of an Application Performance Management series written in cooperation with IDC.

The New Role of Application Infrastructure

Enterprises face increasingly challenging and complex business environments. As a result, they need a comprehensive, but systematic approach to application infrastructure design, implementation, management and on-going optimization. Application performance management (APM) provides the stable, reliable infrastructure framework needed for the execution and on-going rationalization of mission-critical business applications and processes.

The infrastructure that powers companies' Web-based operations no longer exists in isolation from the rest of the business process. Gone are the days when hosting began and ended with a simple static Web site on a single dedicated or shared server. Today, as enterprises seek to lower operational costs and improve efficiency, many aspects of internal and external-facing business processes are being centralized, IP-enabled and inter-networked.

At the same time, processes as varied and focused as supply chain, sales, marketing, customer relationship management (CRM) and enterprise resource management (ERM) are undergoing extensive transformation. This development opens new channels for customer service, product delivery, distribution and procurement by leveraging the Internet as a transactional and connectivity vehicle for core business processes.

It also requires the IT manager to keep the application infrastructure up and running, and performing optimally, which is becoming increasingly difficult. When asked what "pain points" were driving their telecom/networking plans and spending decisions, almost half the respondents in a recent IDC survey identified improving the performance of applications running over a network as a key concern (see Figure 1 on page 2).

Solutions that solve part of the problem are available. However, managing, monitoring and upgrading the various network, computing and application components as technology silos no longer gets the job done. IT managers need intelligence and visibility about the total environment, including servers, storage, applications, operating systems, desktops and networks.

APM is a process-based approach to application infrastructure design and management that ultimately delivers stable, predictable business process performance. This includes end-to-end monitoring, control and visibility. With this approach, the network no longer stops at the parameters of the corporate data center. Instead, APM combines computing and networking to optimize application performance in increasingly network-centric business environments.

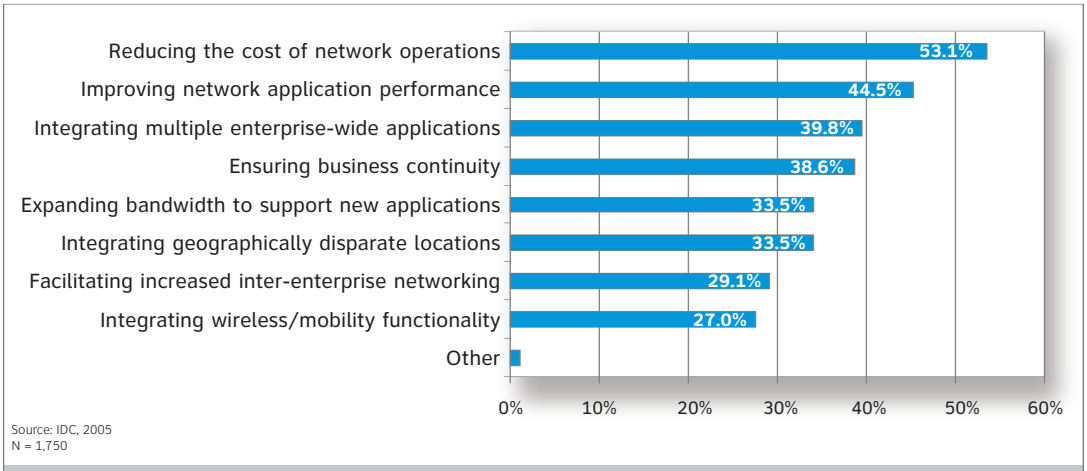
In this article, we describe the toolkit of software and systems needed for APM, as well as the processes and best practices. We also discuss the business benefits of APM, and the merits of partnering with a service provider to design, build, deploy and manage the application infrastructure needed for success in an increasingly connected world.

The APM Toolkit

The foundation element of APM is a comprehensive toolkit of software and systems. The software facilitates granular monitoring, troubleshooting and analysis of the individual application infrastructure resource components. The systems correlate this component-level information to provide a macro-level view of the entire application environment.

This tool set spans the continuum of the APM process, including planning, design, deployment and management and reporting. The planning phase of APM involves capturing the business-level and applications requirements and mapping out the IT and network resources needed to support them. This requires tools that benchmark and correlate IT component-level performance parameters.

Telecom/Networking Pain Points



Source: IDC, 2005
N = 1,750

Percentage responses to "What are the three primary factors or 'pain points' currently driving your organization's telecom/networking plans and spending decisions?"

The design and deployment phases utilize the planning phase capabilities and also incorporate engineering and implementation tools for hardware and software asset management, configuration management, capacity management and component-level, real-time monitoring.

During the management and reporting stage, a key tool is the top-down management system that aggregates and correlates the monitored data from each layer of the application stack to detect, isolate and resolve problems that impact the performance of the composite application or business process.

Hosting is a key component of APM, but there's more to it than just collocation and management of the technology components, such as servers, databases, load balancing and firewalls. Applications "live" and interact on infrastructure housed and managed in Internet data centers. However, business processes extend beyond the glass walls of the data center, and the resulting functionality is delivered over wide-area networks.

Finally, an application-oriented focus is a key attribute of the APM approach – one that ultimately requires more than just tools. Enterprises can no longer depend on just additional bandwidth or hardware to improve performance. This is both inefficient and time consuming. A keen knowledge of the optimum underpinning infrastructure required for each application is a critical requirement. This comes from experience and expertise in the IT and networking environment.

Elements of the APM Approach: Processes and Best Practices

While tools are an important aspect of APM, they are only one piece of the puzzle. Skills and processes put the tools to work, and play a major role in the evolution from infrastructure and network management to performance management.

APM, in effect, turns traditional hosting and networking inside out – starting with the business processes and the required performance, and then building the operational and management architecture needed to get there. The development of applications-focused infrastructure management is an iterative process that requires three elements: a systematic approach, a disciplined mindset and multiple skill sets.

Pre-production processes play a key role in achieving successful APM implementation. The most important of these is applications due diligence, which is essentially a discovery mission to capture and define the operational attributes of the application or business process. The post-deployment processes of operation and management rely heavily on the procedures put in place during the pre-production phase.

Design and engineering skills and processes are key requirements for APM implementations, but enterprises also need experienced operations-oriented technical personnel with certifications for the major networking, hardware, security and middleware/applications products and standards.

Putting It All Together

The final element of APM involves integration of the tools, processes and skill sets into holistic application infrastructure solutions. Whichever approach enterprises take to APM – performance engineering, network optimization or data center networking – there is also the question of how to put it all together.

Some enterprises take the do-it-yourself route and purchase the necessary system- and device-level management and monitoring tools, infrastructure components and network services, and then configure, install and operate all of the piece parts as a unified

environment. Others prefer to work with partners on some or all of the phases of creating and maintaining performance-optimized application environments.

Processes & Tools

APM Processes	Tools Needed For:
Planning	Requirements Capture Resource Mapping Benchmarking
Design and Deployment	Performance Assessment Hardware/Software Asset Management Configuration Management Capacity Management Component Monitoring
Management and Reporting	Data Aggregation/Monitoring Performance Assessment

There are many advantages to outsourcing APM. The right provider will possess the experience, certified personnel and vision for implementing and maintaining a reliable APM platform. Enterprises will also be able to utilize their provider for a wide range of expertise, technical support and advice in this rapidly evolving environment.

Reaping the Benefits of APM

The primary benefits of APM include higher application availability and consistent application performance, improved total cost of ownership and return on investment and scalable, rapid-rollout of new applications.

Availability and Consistency

Availability, reliability and consistent application performance are key benefits of APM, regardless of whether enterprises choose the do-it-yourself approach, utilize service providers for certain elements of the solution, or take the total outsourcing route.

Application performance encompasses a number of factors, including uptime, reliability, scalability, interoperability and security. Even if the hardware and software supporting the constituent enabling applications is performing up to standard, the interfaces among the different transaction elements may have failed, thus knocking out the overall business process.

With APM, enterprises can avoid this situation by linking the application, or "the end," with the "means" (the enabling infrastructure) to obtain an end-to-end view of the process and correlate the impact of component-level and business-level events. Application end users – customers, partners and employees – just want the application to work, and if it doesn't, they are not terribly interested in the details around server and network failures. APM provides the up-front application infrastructure instrumentation and top-level management capabilities enterprises need to minimize downtime.

Improved Total-Cost-of-Ownership

Total cost of ownership (TCO) and return on investment are top-of-mind considerations with regard to IT purchases and planning. Enterprises that optimize their application infrastructure environments for performance no longer need to over-provision IT infrastructure as an insurance policy against demand spikes and resource failures.

Scalable, Rapid-Rollout Environments for New Applications

Enterprises face changing business environments. Their application environments must be able to respond quickly to new opportunities and challenges presented by the globalization of commerce, growing competition for customer attention and dollars, multi-channel marketing imperatives, geographically dispersed supply chains and decentralized work forces. Integrated and agile environments enable enterprises to validate new applications and technologies prior to deployment on the production infrastructure. The APM approach expands enterprises' ability to ensure that the hardware, software and networking resources needed to support new applications are available, thus mitigating any disruptive impact on existing applications and processes. Emerging automation and virtualization technologies help APM to accelerate the rollout of new applications, shortening the time-to-market for new initiatives, while improved control mechanisms allow enterprises to adjust network performance according to changing business circumstances.

Implementing APM: Partnering for Success

Companies that view their application infrastructure environments as strategic components of their business operations must develop homegrown integration, design and operations expertise, alongside the more fundamental industry-specific competencies needed to run their businesses. But there is another way. Enterprises can utilize external service providers to supplement internal resources to provide solutions to the increasingly complex task of maintaining and scaling robust application infrastructures.

Enterprises need to think about the business objectives that their application infrastructures support and ask themselves whether the ability to realize these goals is in any way determined or enhanced by internal management of the supporting environment.

While enterprises may possess the internal resources to design and deploy performance-oriented application infrastructure environments, other issues come into play after the initial deployment because business process and application requirements evolve and expand, requiring frequent adjustments to the supporting infrastructure. Ultimately, working with a partner lowers enterprise TCO and improves

performance by shifting some or all of the responsibility of application environment management to a specialist, whose value proposition and reputation rest on its ability to implement, operate, maintain and (inevitably) transform the underlying platform technology-based business operations.

Conclusion and Next Steps

The APM approach to integrated, intelligent infrastructure for application and business process delivery is an ideal starting point for enterprises looking to migrate toward a dynamic networked applications environment featuring automated provisioning, capacity and resources on-demand and end-to-end monitoring and management.

Service provider partners can help enterprises design, build, deploy and manage the application execution and distribution environments needed to conduct business operations in an increasingly connected world. Furthermore, service providers are a valuable resource for enterprises planning next-generation application architectures that embed broad ranges of federated services and capabilities into the network.

When is the ideal time to implement APM? Enterprises should be investigating APM before the catastrophic disruption or seminal event of the business process. Identifying the right business partner is just as important as choosing the actual APM platform. The ideal partner should have demonstrable experience and personnel to design, implement and maintain APM processes. Such a partner will understand the enterprise mission, priorities and business process. The partner will also possess the expertise and vision that will enable the enterprise to successfully design, implement and operate a complex, finely tuned engine that will generate significant returns over the long term.

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