Managing Performance Through Capacity Planning

Introduction

The HyPerformix Integrated Performance Suite™ (IPS) facilitates a lifecycle approach to ensuring the performance of enterprise applications and IT infrastructures. When used as part of the capacity planning process, IPS ensures performance requirements will be maintained throughout the applications lifecycle.

According to Gartner Group[1], capacity planning is a proactive workflow process for anticipating resource requirements. Simply put, capacity planning ensures enterprise application performance goals will be met in the future.

GartnerGroup also explains that capacity planning provides two key benefits:

1. The power to address availability and performance issues that impact revenue and productivity as well as image and reputation.
2. The ability to plan upgrades and therefore optimize capital expenditures.

Enterprise Application Lifecycle

Capacity planning occurs throughout the life of an enterprise application.

There are three distinct phases that make up an enterprise application lifecycle: Design, Development & Testing, and Production. Each of these phases has a unique set of requirements that must be addressed in order to assure performance requirements are met.

1. **Design phase:** During the design phase, availability and performance requirements are defined along with design specifications. IPS is used during this phase to validate the architecture before any hardware investments are made.

2. **Development & Testing phase:** During the development and testing phase enterprise applications are developed with functional testing, benchmarking, and load testing. IPS is used during this phase to provide performance modeling that accurately predicts performance before the physical environment exists.

3. **Production phase:** During the production phase the IT infrastructure is managed using monitoring and load balancing tools. IPS is used during this phase to provide 'what if' analysis – predicting the performance of changes before they are made – ensuring the system's ability to meet future performance requirements. IPS also helps identify the best solution to any performance problem encountered. This provides critical remediations of enterprise applications and IT infrastructures that monitoring and load-testing alone are unable to perform.

Components of Capacity Planning

There are four components of capacity planning:

- Data Analysis
- Load Testing
- Monitoring
- Simulation Modeling

IPS provides data analysis and simulation modeling, it does not provide monitoring or load testing capabilities. However, IPS uses the data collected by monitoring and load testing products to create and validate simulation models.

Data Analysis

Data analysis is used to gather performance data from an existing system and analyze it to identify performance problems. A number of tools are available to collect performance data throughout an IT enterprise. IPS uses the data collected to identify performance issues as well as build simulation models.

Load Testing

Load testing is a technique used to test existing systems by creating and executing virtual workloads and measuring the systems behavior. Load testing is used **AFTER** an enterprise application has been developed. Load testing is costly and time consuming and significantly affects the performance of the system during these tests, making it impractical

[1] E-Business Management and Capacity Planning, M. Govekar, GartnerGroup, January 12, 2000.

for systems in production. Load testing cannot explain how to improve the performance of an enterprise application or how to change the IT infrastructure to meet future needs. However, load testing can determine how well an existing system will perform which is valuable when used to validate simulation models built using IPS.

Monitoring

Monitoring is used to track system performance and identify failures of existing systems. Monitoring cannot predict future behavior or identify where the performance problem lies. Monitoring provides an alert that an event has occurred which may require attention. Monitoring is a necessary component in the capacity planning process as it provides valuable data used by IPS.

Simulation Modeling

While simulation modeling occurs in all phases of an applications lifecycle, it can have the biggest impact when used during the design phase. The ability to create a model of the entire environment complete with computer systems, networks, routers, bridges, hubs, applications, databases, and users, and then perform simulations of the interactions between all of the components provides the ability to predict with a high degree of certainty exactly how they will perform **BEFORE** any hardware investments have been made. No other capacity planning component plays a bigger role in assuring performance success than simulation modeling. Simulation modeling can accurately model any software, hardware, and network, no matter how complex.

Conclusion

When all of the capacity planning elements are combined, a complete solution for managing the performance of enterprise applications can be provided. The HyPerformix Integrated Performance Suite delivers powerful technology used to manage the capacity of critical enterprise applications and IT infrastructures, across all elements of capacity planning.

About HyPerformix

HyPerformix offers enterprise performance solutions to Global 2000 companies, enabling them to predict, optimize and validate end-to-end performance of mission-critical, enterprise applications and IT infrastructures. HyPerformix's enterprise approach to performance management combines leading-edge predictive modeling and data analysis software technology, extensive performance-engineering expertise, and a proven performance-assurance methodology. Specifically, HyPerformix enables its customers to predict enterprise-wide performance, optimize existing IT infrastructures for improved return on investment, and validate mission-critical systems before and after deployment.

HyPerformix is headquartered in Austin, Texas, and has offices throughout the Unites States as well as in the United Kingdom, France and Japan. HyPerformix also has technology distributors in Japan, China, Korea, and Germany.

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