The new role of diagnostics in the performance and availability lifecycle

White paper
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Challenges in delivering IT service quality

Ensuring the quality, performance, availability and integrity of business applications is critical to your business. Yet it is increasingly difficult to deliver high-quality IT services. Several major trends affect your ability to align IT with business needs and accomplish service objectives:

• **Complexity of composite software applications:** Modern business applications are distributed solutions comprised of multiple software components built with J2EE, .NET and Web services technology. Using encapsulated software objects in these service-oriented architectures (SOAs) enhances flexibility and efficiency in coding, but also makes it harder to diagnose application problems. Multiple software components are interwoven into complex software services that are often integrated with portals, legacy systems and packaged applications. The wide range of diverse application services and infrastructure components in an SOA can make it difficult to trace application performance and availability issues.

• **Business pressures:** With business pressures for shorter software development cycles, you may agree to project schedules without adequate testing time. Rapid change in today’s business environments further challenges your software quality. In order to deliver high levels of service in an environment where IT services are constantly adapted to changing business needs, you need effective change management, as well as a way to integrate the business impact of IT changes into the decision-making process. You must understand and evaluate business impact and business risks when making decisions about IT changes and responding to IT service incidents. And you must accomplish all of this with limited resources, including budget and staffing constraints. You must keep IT skill sets up-to-date without expensive training and without incurring project delays.

• **The drive for strategic sourcing:** Strategic sourcing offers a profound opportunity for you to increase business value by optimizing the mix of in-house, outsourced and offshore IT projects. For strategic sourcing to succeed, however, you must focus on the quality of IT services. Regardless of where an IT service is hosted and managed, end users must experience the same high quality and high standards.

In light of these challenges and ever-increasing demands for higher service-level performance, a new approach is needed for software QA and diagnostics. Traditional approaches to QA have usually involved a separate QA and test organization that is isolated from both the software development and production implementation teams.

In this traditional approach, the QA team begins testing when a formal software release is thrown over the wall from the development organization. Because QA teams are not engaged in discussions with the developers and architects prior to this point, they have no understanding of application behavior and where performance hot spots exist. QA engineers do their best to design adequate load tests, but are often under too much time pressure to do further research on application behavior. Communication with developers and architects regarding test design can be quite limited in this approach.

Because the testing team is separate from the production deployment team, it does not always have a realistic view about loads in the production environment. This creates problems in production.

Abstract: IT service quality is more important than ever, and yet many organizations underachieve in this area. Traditional approaches to quality assurance (QA) and application management are inadequate for managing performance and availability in today’s composite application environments. A new approach combines tools that support lifecycle diagnostics with best practices that promote collaboration among cross-functional teams. This paper offers our view on best practices for lifecycle diagnostics and describes how the right diagnostics tools can help QA teams, developers, architects and production implementation teams improve IT service quality. With our business technology optimization (BTO) software offerings, HP can help your organization implement application diagnostics and performance and availability management solutions to improve IT operational efficiency and deliver higher-quality IT services.
Bringing these cross-functional teams together shortly before the production implementation is scheduled to go live is often too little, too late. At this stage, there is not enough time in the project schedule to redesign the application. So if performance problems are discovered, the project team must implement quick fixes. The team typically throws more hardware at the problem until it achieves the desired performance and load levels. This approach is expensive and fails to address the root cause of the performance problems.

When software teams do not collaborate across the lifecycle, there is also a temptation for everyone to point the blame in another direction when a production problem surfaces. This is especially likely when all departments use different assessment tools. Each team might look at the problem with its own tools and declare that the problem lies elsewhere because the application works fine in their own environment. If there has been collaboration, however, teams often share ownership and QA and development teams work with the production team to isolate the problem. This is even more effective when departments use the same tools and instrumentation throughout the software lifecycle.

**A new approach: lifecycle diagnostics**

By taking a lifecycle approach to performance and availability management, you can avoid the process breakdown common in traditional approaches to software quality. Instead of treating QA as a separate silo organization within the business, you can approach diagnostics and software performance management as a discipline that spans the software lifecycle. This provides an opportunity for cross-functional teams to collaborate and deliver high-quality software services.

HP Software offers you an integrated approach to the performance and availability lifecycle with three major advantages:

- **Integration across the lifecycle:** HP diagnostics software spans the entire application lifecycle and includes direct integration with our performance validation software, HP LoadRunner software. HP diagnostics software is also integrated with the application management components of HP Business Availability Center software.

- **Support for heterogeneous environments:** While many business applications are now written using J2EE technology, they are also integrated with a host of other technologies. Our solution provides you with a common set of tools to trace software problems across multiple environments, including J2EE, .NET and several major third-party business software solutions, including Oracle®, SAP and Siebel.

- **A top-down approach:** Rather than starting from a component view of the IT environment, where problems are identified in specific hardware and software components, our methodology starts with business processes and then maps these business services onto application and infrastructure components. This approach enables you to diagnose and resolve problems by first looking at business services that are impacted, and then drilling down into component-level details from within the context of this business-centric view.

The following sections examine how a lifecycle approach to performance and availability management and diagnostics can impact traditional IT roles, including software developers, QA/test personnel, architects and production engineers. The QA organization is
well-suited to extend traditional load testing into the
performance and availability lifecycle. Diagnostics
can also play an important role. Developers and
architects can collaborate with QA personnel and
production engineers to make this happen. The best
practices included in the following sections can help
your business shape its IT operational procedures and
IT staff roles to gain greater value from performance
and availability management and diagnostics.

Diagnostics as the next generation
of load testing
Most QA organizations test the functional features of a
software application, as well as the performance of the
application, under simulated load conditions. However,
sometimes an application will pass the load test and
still exhibit performance problems in the production
implementation. This can occur if testing does not
adequately represent the conditions of the production
environment, especially when developers and/or the
QA organization lack visibility into how the application
must perform under load. Finding performance problems
after the production implementation has gone live
can obviously have a negative and direct impact on
the business.

Evolution of load testing
As diagnostic tools have matured and organizations
have embraced the importance of performance
management, the silo treatment of performance testing
has shifted. QA organizations began evolving
performance management by testing user loads to
determine the breaking point of an application. This
enables production teams to know the application’s
maximum capacity. With improved tools, you can now
collect data about performance during the initial QA
testing phase, as well as during production execution.

You can also analyze performance trends for live
applications with real user loads, providing an accurate
view of application behavior in terms of business and
end-user impact. Modern tools have taken this even one
step further by providing methods to trace the root cause
of poor application performance and errant behavior.
But even this root-cause analysis is not enough.

As shown in Figure 1, today’s leading IT shops are
moving toward a collaborative process for managing
the performance and availability lifecycle. It’s only
valuable to find maximum loads and root causes of
problems if it’s part of a continuous improvement
process that enables you to monitor application
performance and meet service-level objectives. In this
iterative process, called lifecycle diagnostics, you can
use the tools and techniques from earlier evolution
stages as stepping stones toward improved performance
and availability.

The QA organization: a logical champion for lifecycle
diagnostics and performance and availability
management
New capacities within software diagnostics tools allow
us to approach QA from a broader perspective that
integrates diagnostics and performance and availability
management into the entire software lifecycle. However,
most businesses are not structured to support performance
and availability management from a lifecycle approach.
Individual departments are responsible for only part
of the performance management picture and do not have
an incentive to take on a broader role.

Driving a new focus on performance and availability
management will require a champion within your
organization and a charter to improve application
performance through the lifecycle. The QA organization
is uniquely positioned to play that role. QA engineers
have the skills to both identify performance issues and drive global processes for monitoring application performance. Most other organizations lack the expertise and resources to understand application performance issues. With QA teams positioned in the middle of the application lifecycle, they can easily lend their expertise to these other organizations. They already interface with developers in the early stages of the application lifecycle, and with production implementation teams in the later stages of the lifecycle.

It’s important that QA teams step up to this role, because they can have a big impact on application availability. Performance problems often only occur under load conditions. Sometimes applications pass the load test in QA, but fail once they are in a production environment. Because QA teams typically investigate and coordinate a response to performance issues, they can drive resolution to production performance problems. Their understanding of how the application performs under load is generally greater than that of developers and architects, and QA engineers generally have more expertise in finding and eradicating performance bottlenecks than production engineers.

Best practices for diagnostics in application delivery
From an application delivery standpoint, current operational procedures are often hindered by lack of adequate time for testing and QA engineers’ lack of application domain expertise. We believe that by enabling developers, architects and QA teams to share a consistent methodology and solution set in the early stages of the application lifecycle, your company can accrue benefits throughout the lifecycle. Specific best practices for the early stages of the lifecycle include:

- **Involve QA early in application design:** By working with application developers as they design their applications, QA engineers can help identify places where instrumentation and monitoring can be incorporated into the design, making it easier to find performance bottlenecks later on. In addition, QA engineers can learn more about the application domain and work with developers to define test scenarios that are more likely to identify both feature/function errors and performance problems.

- **Schedule additional time for performance/load testing:** QA engineers are likely to agree that additional time for application load characterization and performance testing would generate greater returns in later stages of the software lifecycle. By allocating more time up front for iterative development testing instead of trying to conduct all the testing after development is complete, you can reduce the total amount of testing required and achieve higher-quality results. When you improve your testing process, you can also achieve quantifiable cost savings that can be identified in advance by analyzing the impact of future application performance problems and breaches to service level agreements (SLAs). You can use cost savings to convince executive management that there will be a strong return on investment (ROI) for testing.

- **Involve collaborative teams in defining load-testing scenarios:** You should design load-testing scenarios based on input from other areas of the software lifecycle. Application architects can provide a deep understanding of how the application works and where its stress points must be tested. Developers and architects should deliver specific test scenarios, instrumentation points and configuration files to the QA team. Software engineers involved in the production implementation, and perhaps even end users, should also provide input into the design of test scenarios. This brings a real-world perspective on how the application will be used in the production environment.
• **Expose performance bugs early**: You can expose performance problems early in the lifecycle with extensive, well-planned testing. If you identify high-load production scenarios early and test them at 150 percent of expected capacity, you can identify and resolve many performance issues before production.

**Extending QA throughout the lifecycle with HP diagnostics software**

HP diagnostics software enables your business to extend its QA process and more easily implement best practices for diagnostics throughout the application lifecycle. HP diagnostics software is fully integrated with HP LoadRunner, HP Performance Center software and HP Business Availability Center, and can be used in both pre-production and production environments. Because we offer an integrated solution and a common set of tools for the entire software lifecycle, we enable QA engineers to more easily collaborate with developers and production software engineers to help maintain better performance in the production environment.

HP diagnostics software helps take load testing to a new level by enabling QA engineers to:

- Provide developers with objective actionable data based on test results so that requirements and responsibility for resolving performance issues is indisputable
- Identify not only the maximum application load, but also application behavior when maximum load is exceeded, and the root cause of any application performance issues that are identified
- Leverage instrumentation defined in development and test to monitor and manage performance and quality in later stages of the software lifecycle
- Establish core metrics for monitoring in the production phase
- Extend testing baselines for application management in the production phase

**Establishing a Performance Center of Excellence**

HP diagnostics software is also designed to help your business implement a Performance Center of Excellence (CoE) that can help institute consistent processes across the software lifecycle. A Performance CoE brings together cross-functional teams of people and multiple processes to drive greater quality and efficiency throughout the software lifecycle.

A centralized authority for managing application performance can help drive:

- Consistent implementation of best practices
- Better decision-making through information sharing and collaboration
- Elimination of duplicated efforts as well as reuse of software components, instrumentation, testing scripts and more

Our lifecycle approach to diagnostics maps well to the CoE model. It allows a centralized performance management team to provide greater business value by going beyond QA and testing and implementing performance and availability management best practices at every lifestyle stage. HP diagnostics software provides additional value within a CoE because it can help mitigate the risk of outages in mission-critical applications, reduce mean time to repair (MTTR), increase mean time between failures (MTBF) and improve overall performance and availability.
Diagnostics as a central component of application management

To truly drive business value, you must design and manage IT services with business impact in mind. Managing business impact starts from the early stages of the application lifecycle, including understanding business requirements and negotiating SLAs that support business goals with realistic, achievable IT services. In later stages of the application lifecycle, you must manage service-level performance using a top-down approach that enables IT staff to prioritize problem resolution and perform triage according to business impact and service-level compliance requirements.

Traditional monitoring and management tools have focused on the availability of individual system components rather than on the applications and services that your IT infrastructure must ultimately deliver. With this limited bottom-up view, it is impossible to gain critical visibility into the status of key business applications or to understand the business impact of outages and events. By contrast, a top-down approach enables you to view IT services from an end-user perspective and starts by identifying the business services experiencing difficulty. It then allows you to drill down into the specific components that underlie those business services.

Diagnostics can play an important role in maintaining service levels for production applications by providing tools to quickly isolate application layer problems, identify their root cause and avoid recurring incidents. When you integrate diagnostics into a broader application management framework, it can be even more effective. An application management framework can provide tools to proactively detect problems before end users are impacted, as well as workflow processes to help prioritize IT incidents according to business impact. Diagnostic solutions can extend the application management framework by enabling you to:

- Rapidly isolate problems to specific system or application components
- Pinpoint the root cause of performance or availability issues to reduce recurring incidents

Application management best practices according to ITIL

The Information Technology Infrastructure Library (ITIL) offers the world’s most widely accepted approach to IT Service Management (ITSM). It provides frameworks for both the organization of ITSM as well as a cohesive set of industry best practices. ITIL goals are to improve IT efficiency and effectiveness and to deliver high quality of service for critical business processes.

A key process within the ITIL Service Delivery discipline is Problem Management, which is intended to reduce the adverse impact of errors within the IT infrastructure and to prevent recurring incidents. ITIL defines a problem as “an unknown underlying cause of one or more incidents.” The Problem Management process is both reactive and proactive because its goal is not only to quickly resolve problems, but also to reduce the number of IT incidents that occur. When an IT incident does occur, you should quickly identify the underlying cause, find a resolution that can restore IT services to normal operation and help prevent recurring problems.

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<th>The ITIL Problem Management process</th>
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<tr>
<td>Analyze incidents and create problems</td>
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<td>Root-cause analysis of problems</td>
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<tr>
<td>Find resolution and manage known errors</td>
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Figure 2. Effective Service Level Management requires input from Availability, Problem and Change Management processes.
The ITIL Problem Management process is part of the broader Service Level Management process within ITIL. ITIL defines an effective Service Level Management process as one that includes input from Availability Management and Problem Management as well as coordination with Change Management processes as shown. It states that Service Level Improvement plans, designed to eradicate poor service and improve service levels, should be based on input from the Problem Management process. Coordinating Problem Management with the Service Level Management process can help ensure that negotiated SLAs are reasonable and achievable within budget.

A diagnostics solution designed to improve service levels must address not only the Problem Management process, but also the other ITIL processes shown in Figure 2. Table 1 provides a brief description of the ITIL goals for each of these processes and how a diagnostic solution can help you achieve those goals.

You can find a more complete review of ITIL best practices in two other HP white papers titled:
• “ITIL best practices for IT and business alignment”
• “ITIL best practices: maximizing the business value of IT—part II”

Augmenting ITIL Problem Management best practices with diagnostics best practices

Although the ITIL processes are sound, putting them into practice requires tools that can enforce repeatable processes, enhance efficiency and help align Problem Management with business goals. Many existing application management tools do not incorporate effective diagnostics solutions, and therefore miss out on potential efficiencies in IT operations. We believe that a lifecycle approach to performance and availability management can bring much greater efficiency and effectiveness to Problem Management. By combining the right tools with proven industry best practices, you can increase the business value of IT services.

We recommend that you augment ITIL best practices for Problem Management with best practices for diagnostics. The following diagnostics best practices leverage content from earlier stages of the application lifecycle to help drive IT operational efficiency and quality:
• **Integrate diagnostics with help desk:** By integrating diagnostics into the help-desk environment, you can include diagnostics data with a help-desk ticket, saving time for engineers assigned to resolve the problems. This improves efficiency and helps to reduce MTTR, which improves service availability.

• **Identify performance hotspots at design time:** Application architects and developers can identify areas of the application design most susceptible to performance issues. They can then develop approaches to enable easier detection of performance bottlenecks, as well as methods to simplify the task of scaling the application after they discover performance bottlenecks. Doing this analysis and design work early in the application lifecycle helps root out performance bugs before the application goes live and makes it easier to maintain service levels once the application is in production.

• **Monitor end-user experience:** Monitoring end-to-end user experience provides visibility into availability issues and performance bottlenecks that you might not detect by simply monitoring availability of individual system components. This can improve SLA performance and end-user satisfaction by allowing IT to address performance and quality issues before end users experience a problem.

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<th>Goals of the ITIL process</th>
<th>How diagnostics can help</th>
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<td>Problem Management</td>
<td>Reduce the adverse impact of errors within the IT infrastructure and prevent recurring incidents related to these errors</td>
<td>• Rapid and accurate root-cause analysis</td>
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<td>• Proactive management to prevent IT incidents</td>
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<td>Service Level Management</td>
<td>Maintain and improve IT service quality through a constant cycle of agreeing, monitoring and reporting upon IT Service Achievements, along with instigation of actions to eradicate poor service</td>
<td>• Establish metrics for monitoring service achievements</td>
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<td></td>
<td>• Provide tools to monitor achievements</td>
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<td></td>
<td></td>
<td>• Reduce mean time to repair (MTTR) through rapid response</td>
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<tr>
<td>Availability Management</td>
<td>Improve the capability of the IT Infrastructure, services and supporting organization to deliver a cost-effective and sustained level of availability that helps the business satisfy business objectives</td>
<td>• Monitor achievements against business objectives</td>
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<td></td>
<td>• Optimize service delivery to meet business objectives</td>
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<td></td>
<td></td>
<td>• Increase mean time between failures (MTBF)</td>
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<td>Change Management</td>
<td>Provide standardized methods and procedures for efficient and prompt handling of all changes in order to reduce the impact of change-related incidents upon service quality</td>
<td>• Enhance stability and quality of released changes</td>
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<td>• Diagnose issues related to application change</td>
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Integrating HP diagnostics software with application management

HP diagnostics software is integrated with the major application management software in HP Business Availability Center:

- **HP End User Management** software enables you to view trends regarding performance of business processes over time and provides a seamless link to HP diagnostics software. You can simply click on a trend analysis chart to review diagnostics details that relate to the trend chart.

- **HP System Availability Management software** includes a triage process linked with application-level diagnostics in HP diagnostics software. When reviewing a specific subsystem that seems to be failing, you can follow a direct link to diagnostic information about that subsystem.

- **HP Business Service Level Management software** uses metrics established from within HP diagnostics software to monitor service-level performance. For example, if load testing required instrumentation to measure the performance of a specific end-to-end transaction, HP Business Service Level Management can monitor and report on the performance of that particular transaction over time.

- **HP Application Mapping software** provides a two-way integration with HP diagnostics software. When analyzing status information about system or service components from within HP Application Mapping, you can drill down into diagnostics information to help understand the status. Secondly, from within HP diagnostics software, you can launch HP Application Mapping to see which system components support a given application.

- **Prioritize IT incidents on a business availability dashboard**: Event management consoles that provide screens of correlated events do little to aid with business priorities and rapid response to IT incidents. Instead of displaying all errors without regard to priority, a business availability dashboard should filter out less important information and provide an executive-level view of key business services experiencing problems. When diagnostics is integrated into a business availability dashboard of this nature, your business can accelerate problem resolution through rapid detection and isolation, and then move quickly to root-cause analysis.

- **Reduce the number of different diagnostic tools**: When possible, you should use a common set of tools to span various stages of the application lifecycle and to analyze multiple types of applications. A common set of tools across different stages of the application lifecycle helps improve communication between departments, such as development, QA and production. When you can use the same tools to traverse several tiers of a distributed software application, including packaged applications, J2EE and .NET environments, you greatly simplify and expedite root-cause analysis.

- **Leverage diagnostic tools for root-cause analysis**: Diagnostic tools that provide deep visibility into the application infrastructure can help you quickly and accurately diagnose the root cause of performance and quality problems. This, in turn, helps you avoid recurrence of incidents and can dramatically improve application performance.

- **Automate processes for approving and releasing changes**: By integrating diagnostics into release procedures, you can complete proper testing before releasing software to production.

- **Maintain an accurate, up-to-date map of system components**: Change management is complicated when there is limited awareness about which IT services will be impacted by changes to a given system component. By automating the process of mapping system components to IT services, your business can improve the success ratio of released changes.

**Leveraging investments in load testing**

You can often reuse artifacts from load testing in QA before the production release to help identify and resolve performance bottlenecks. For example, you can use testing scripts, core metrics from QA load tests to monitor the production environment, and characterization of user loads as a baseline for SLAs. The lifecycle approach and complete integration of HP diagnostics software not only makes it possible for you to leverage artifacts from QA testing, but also to readily share information throughout the application lifecycle.

**Diagnostics and outsourced operations**

As more components of IT operations move to the outsourcing model, your business should keep a close watch on the effectiveness and quality of outsourced IT services. The same principles apply for both in-house and outsourced IT services. They must be aligned with business needs and provide high levels of service. A key to making an outsourcing situation work well is defining clear ownership of deliverables, agreed-upon service levels and consequences for failure to meet SLAs. The ITIL Service Level Management process includes clear guidelines for creating SLAs that define the responsibilities and expectations for IT service deployment. These ITIL guidelines can be used for both outsourcing situations and in-house deployments.

Outsourced operations can also take advantage of many best practices discussed above to streamline problem resolution and the entire Service Level Management process. The use of diagnostics tools should be included in SLAs. Guidelines on how the in-house IT staff and the outsourcing party will collaborate on problem resolution should also be included in SLAs.

**Diagnostics is critical to managing the performance and availability lifecycle**

Because diagnostics has traditionally been a function of the QA and test environment, it can require a concerted effort to bring about an organizational change so that diagnostics becomes part of every application lifecycle stage. Diagnostic tools can enable your business to extend performance and availability management disciplines throughout the application lifecycle. If you incorporate diagnostics into quality management phases, your organization can begin to make the transition to a lifecycle approach to performance and availability management.

We recommend the following best practices to help establish lifecycle diagnostics and manage the performance and availability lifecycle:

- **Establish performance management best practices**: By formally defining performance management best practices, you can drive consistent implementation throughout the lifecycle. Your best practices should clearly define ownership and roles of people involved in the software lifecycle and include specific practices for each stage.
Driving a lifecycle strategy for implementing diagnostics: A lifecycle strategy for diagnostics requires that you review each application lifecycle stage and the tools required to implement best practices. Your strategy should define how applications will use diagnostic tools in each phase and identify which applications will be first to employ performance and availability management best practices.

Use diagnostics in application development: Software teams can get an early start on performance management by defining metrics for monitoring application performance during the development phase. You can also use diagnostics tools to find the root cause of performance issues identified during routine testing of early stage software releases.

Collaborate on software testing: Developers and architects can bring important insights to the design and development of load tests that are generally executed by the QA team, and should therefore be involved in that process.

Prepare production teams for problem resolution: Production teams often rely on developers and architects to help resolve performance and quality problems that are discovered in the production implementation. Yet developers and architects often have limited time to help with production issues without causing schedule conflicts for other projects. It’s best to establish early communication between developers, architects and production engineers. This will provide production teams with an understanding of the application design, as well as provide diagnostic information to developers and architects when they need to help.

Better access to application performance metrics with HP diagnostics software
To help developers see firsthand the benefits of lifecycle diagnostics, we have developed a free trial download solution. Developers can use this tool under limited conditions during unit testing so that they can identify and record key application performance metrics, such as transaction response times, memory utilization and exceptions. Because developers have access to these performance metrics at an early stage of the development cycle, they can begin tuning performance before waiting for full application load testing. They can also pass instrumentation points along to QA to enable greater efficiency in load testing and to drive consistent use of test data throughout the lifecycle.

Conclusion
Lifecycle diagnostics is a new IT discipline that should be integrated into all processes across the application lifecycle. Your QA organizations can extend its business value by leveraging your understanding of load testing and ushering performance management best practices into other areas of the application lifecycle. Production systems management can benefit greatly from using diagnostics as a central part of the Service Level Management process. Encouraging developers and architects to be proactive about performance management and engage with QA test teams early in the application lifecycle can help you improve service-level performance in later stages of the lifecycle, as well as reduce the cost of application management.

You can use tools throughout the organization that can have a big impact on your ability to implement diagnostics best practices. HP provides a complete lifecycle diagnostics offering that includes an integrated solution for heterogeneous environments and uses a top-down approach to problem detection and resolution (Figure 3).
Our lifecycle approach spans from application development through load testing and application management. A single integrated toolset enables easier sharing and helps foster collaboration among previously separate functions, such as development, QA and production. The common set of tools also greatly simplifies Problem Management because all parties see the same metrics and test results. This helps departments avoid blaming each other when their different tools show inconsistent results.

We also understand that applications do not run in a vacuum, but are connected within a heterogeneous environment that includes multiple types of applications. It’s difficult to diagnose problems if you must use different tools in order to follow application logic that spans different application environments. Our complete offering enables you to use an integrated toolset that spans J2EE, .NET and mainstream business applications, such as SAP and Siebel.

Finally, the top-down perspective offered by HP diagnostics software improves visibility into the status of key business applications and enables you to understand the business impact of outages and events. Our methodology allows diagnosis to start from business impact rather than from component-level failures that are hard to prioritize. It facilitates a proactive approach to performance management and rapid resolution to IT service problems.

Flexible delivery option through HP Managed Software Solutions

If your organization wants to begin immediately realizing benefits from HP diagnostics software, HP Managed Software Solutions can help you get up and running quickly and effectively. HP Managed Software Solutions include the infrastructure, operations, expertise and ongoing mentoring to help you optimize service management, and it is tailored to the needs of your business. With thousands of current customers, HP Managed Software Solutions has the experience to help your company move from fast managed service deployment to eventual in-house deployment with our ongoing assistance.

Contact information

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