

When application performance is better, business works better.

How APM improves IT operational efficiency
and customer satisfaction.



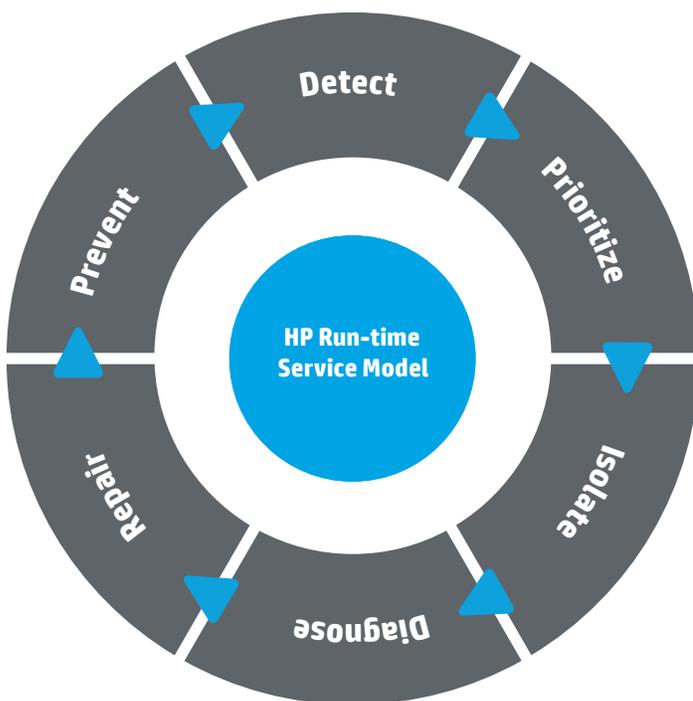
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Monitor. Manage. Perform.

IT organizations are under pressure to reduce downtime and improve the quality of user experience by optimizing the availability and performance of their applications and key business services. Enter HP Application Performance Management (APM), a comprehensive application management solution that helps you proactively identify and resolve problems quickly and efficiently, before the business is impacted. This HP software offering allows 360 degree monitoring and management of business services and application health from the point of view of key stakeholders—the business, its customers, and its partners. HP Application Performance Management is also integral to IT service management processes, so IT operations can efficiently and cost-effectively provide closed-loop incident, problem, and change management.

Figure 1.
The HP approach to application performance management



What is HP Application Performance Management?

HP Application Performance Management (APM) allows you to reduce downtime and improve the quality of user experience by enhancing the overall performance of your application. With HP APM, you can also quickly pinpoint the location and root cause of problems, creating IT domain collaboration and efficiency.

HP APM allows you to:

- Provide end-to-end visibility into transactions and transaction value, all the way to back-end systems and mainframes
- Understand key business metrics of individual business processes that fail, such as order backlog or dollars impacted
- Monitor the end-user application experience and services using both synthetic and real-user performance monitoring
- Manage infrastructure and business-based service levels
- Triage and analyze the root causes of problems in complex and composite applications across J2EE, .NET, SAP, Oracle, Siebel, service-oriented architecture (SOA), and other environments
- Find and resolve application performance problems quickly, using guided workflows that enable accurate problem assignment responsibility to the appropriate subject-matter expert
- Integrate and correlate application performance data with network performance metrics to rapidly isolate problems and accurately perform incident management
- Collaborate with application development teams to effectively resolve application and transaction issues
- Reduce mean time to repair for your critical business transactions
- Offer role-based application views that dynamically link end-user experience with system performance using a unified model
- Monitor application performance of applications deployed to a cloud or virtual environment
- View application performance alerts anytime, anywhere on your mobile device quickly and easily

HP business service management: analyze the business impact of IT problems.

HP APM is a key component of the HP business service management (BSM) solution initiative. BSM directly associates business services with their underlying applications, infrastructure, and network components to help you analyze and report the business-service impact of IT problems and reduce the potential costs of IT service downtime and staff inefficiencies. Unlike other solutions, HP BSM delivers high-quality operations with both top-down and bottom-up approaches, combining HP APM with HP Operations Center and HP Network Management Center software, as well as integrations with HP Service Manager and supporting it with a single version of the truth in HP Universal CMDB software

Figure 2.
The HP approach to application performance management

Application	Availability			Performance			Volume
	(%)	During past day	Locations	(%)	During past day	Locations	
Business Application Team6	100.00			99.87			1,600
Real User Session Data	100.00			99.87			1,600
BPM App1	100.00			100.00			9,252
Synthetic User Data	100.00			100.00			9,252
BPM App4	75.56			100.00			11,747
Synthetic User Data	75.56			100.00			11,747
HPSTS	100.00			100.00			545
Synthetic User Data	100.00			100.00			545
BPM App2	75.18			60.52			7,775
Synthetic User Data	75.18			60.52			7,775
Business Application Team3	100.00			99.93			1,479
Real User Session Data	100.00			99.93			1,479
BPM App3	69.82			58.66			7,161
Synthetic User Data	69.82			58.66			7,161

Number of Locations with Low Availability: 2
Number of Locations with Good Availability: 0

The HP approach to application performance management

HP APM provides comprehensive, end-to-end application performance management with software that helps you detect, prioritize, isolate, diagnose, repair, and prevent problems before they impact users, customers, and the business itself. It brings together information about end-user experience, transactions, and application instrumentation that is dynamically linked to the infrastructure. All of this information is displayed in an actionable, relevant context to all stakeholders, including those not in IT. When this is achieved, the result is predictable—everyone involved is able to manage application performance, which improves business performance.

Detect by monitoring the end-user experience.

When an application's performance falls below acceptable levels IT is often the last to know. More often than not, an end user or customer must call in to complain. To address this challenge, IT needs an early-warning system that can detect problems before they make an impact on business performance. This is best achieved by monitoring the end-user experience and the transactions as they flow across the application tiers.

HP end-user management software

HP software for end-user management provides comprehensive, integrated user monitoring to align IT with end-user business processes. We use a combination of synthetic transaction monitoring (HP Business Process Monitor) and real-user monitoring (HP Real User Monitor) from all domains to provide real-time visibility into users' quality of experience (QoE). HP end-user management software enables you to proactively identify the scope of an issue, gauge the customer and business impact, and as a result prioritize and respond appropriately.

HP end-user management software helps you:

- Visualize the user experience in order to prioritize IT response based on customer and business impact
- Perform trend analysis based on end-user metrics in order to proactively identify issues before users are impacted
- Reduce the business impact of end-user outages and performance issues
- Provide real-time visibility into user behavior and experience
- Monitor and manage the performance of all business critical applications, including client/ server (TCP/IP), Web services (SOAP/XML), and Web-based (http and https) applications
- Integrate application and network management to monitor and resolve performance issues quickly

Figure 3.
Personalized views for business prioritization



Prioritize by determining business impact.

Once you know that an application problem exists, your IT staff must have a way to prioritize its activities in response. To serve the business best, you must know which problems have the potential to adversely impact business operations the most—and then focus on those issues first. For complex IT infrastructures, this is almost impossible to determine without powerful dependency-mapping capabilities, common dashboards that provide visibility into key performance indicators (KPIs) related to the map, and clearly defined service level agreements (SLAs).

HP Service Level Management software

With HP Service Level Management, you can compare actual application performance to business goals. This software helps you determine whether business requirements are being met. It sends alerts that performance is in danger of falling below agreed-on service levels, potentially saving money by avoiding financial penalties. In addition, you can map service levels to the underlying operational level agreements (OLAs) and underpinning contracts to see which infrastructure tiers impact end-user service-level achievement.

With HP Service Level Management software, you can:

- Define realistic, quantifiable availability and performance objectives that reflect business goals
- Measure performance and availability as end users experience them
- Track service-level availability and performance, both on a real-time basis and for offline planning purposes
- Isolate and resolve performance problems before they impact service-level objectives
- Remove the need for manual, ongoing report generation, which reduces costs
- Improve the availability of revenue-producing applications, increasing productivity

HP Discovery and Dependency Mapping software

HP Discovery and Dependency Mapping software dynamically discovers and maps IT service dependencies between applications and the underlying infrastructure, to provide visibility and control over business services with minimal effort and cost. It also populates HP Universal CMDB (UCMDB) to create an accurate service model. The tightly integrated HP Discovery and Dependency Mapping and HP Universal CMDB streamline data instantiation, updates, and proactive impact analysis so that you don't have to rely on tying together two or more separate systems.

With HP Discovery and Dependency Mapping software, you can:

- Use more than 100 out-of-the-box discovery patterns and automated discovery processes to accelerate UCMDB adoption
- Automate maintenance to improve the accuracy of your CMDB
- Reduce deployment and maintenance overhead typically associated with customization and updates
- Select which patterns to run and when to run them, to control the discovery process

Isolate to speed resolution times and transaction performance.

As multi-vendor IT infrastructures grow to include service-oriented architecture (SOA), composite applications, and complex technologies such as virtualization and the cloud, organizations are constantly challenged to pinpoint problem areas among an ever-increasing range of possibilities. Even in a virtual environment, you want to make sure that your user experience does not suffer as the infrastructure changes underneath. This is why it's important to monitor from the end-user perspective. With end-user monitoring and a unified model in place, your organization can leverage these tools to automatically narrow down the scope of detected problems and allocate tickets to the proper domain group.

The challenges of increasingly complex environments not only surface in the end-user experience, but also have significant impact on the performance of transactions that support lines of business, propel operational processes, and move the business forward. Lack of data is not the problem here either, as line-of-business owners quickly find out that they do not need more IT infrastructure data without context, and they need to work smarter with their IT partners. Monitoring the flow of all transactions and following specific transaction instances through all application and infrastructure tiers helps to facilitate the application and transaction performance. HP Application Performance Management, with its comprehensive transaction management capabilities, does just that by dynamically combining the critical end-user perspective, near-real-time diagnostic data from the supporting applications themselves, and traditional infrastructure performance and availability information to provide an actionable, role-based view of the entire lifecycle of all transactions. The APM solution does this by leveraging key foundation components.

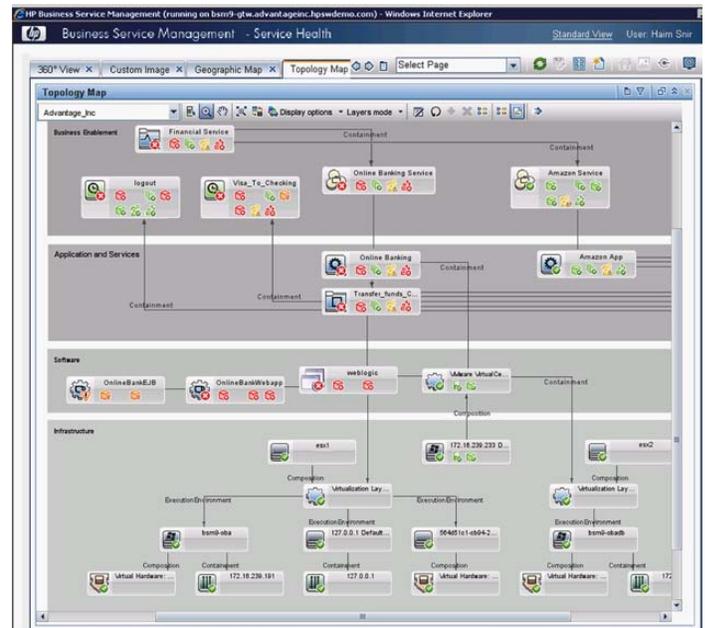
HP Application Performance Management Foundation

The Run-time Service Model, the core of the HP APM solution, serves as the repository for all discovered configuration items, including the relationships among them (topology), and the dependencies between the application, transactions, business services, and the underlying IT infrastructure. The Run-time Service Model can receive discovery information from multiple automated discovery sources, providing a complete and up-to-date picture of the managed environment, and enabling the sophisticated impact analysis needed to speed isolation times.

The Run-time Service Model updates on a near real-time basis if a monitored component or its context changes in any way. This dynamic, accurate, and up-to-date view of how infrastructure components relate to one another speeds diagnosis and eliminates the burden on expert staff to maintain complex static rules and mappings, allowing them to work on more strategic projects.

The HP APM dashboard provides a role-based, user-based, and customizable business service dashboard, creating a common environment that brings together real-time service health, business impact, incidents, and historical performance data from the

Figure 4.
Run-time Service Model for rapid isolation



underlying products in HP APM. You can create personalized views from dozens of predefined components, enabling you to focus on the key performance indicators (KPIs) for your critical business services.

Bringing together this information into a single window allows you to view the health across applications, transactions, and its underlying infrastructure components to reduce the complexity involved with isolating an application performance issue.

HP System Availability Management software

HP System Availability Management helps you deploy and maintain a cost-effective enterprise infrastructure monitoring solution. It combines agent-based and agentless monitors to provide comprehensive coverage. By providing the ability to integrate with existing enterprise management system (EMS) products, HP System Availability Management allows you to:

- View infrastructure monitoring data within the context of your application performance
- Understand how infrastructure components affect application performance and availability
- Collect infrastructure status data, whether you have deployed multiple HP SiteScope software servers, HP Operations Orchestration, or a third-party management system
- Integrate with major ticketing systems
- Leverage your current investment in infrastructure monitoring tools

HP Transaction Management: Transaction Monitoring

HP Transaction Management's Transaction Monitoring (composed of HP Real User Monitor, HP Diagnostics, and HP TransactionVision) helps you enable the speedy and consistent flow of transactions as they traverse applications and infrastructure to support lines of business, propel operational processes, and move the business forward. Combining both end-user and instrumentation-level perspectives of transaction volume and paths as they flow uniquely provides an end-to-end view of transaction performance that enables you to:

- Automatically discover and classify all transactions, all of the time
- Instantly uncover transaction performance bottlenecks
- Access historical data and trend details to focus IT investment on improving transaction performance

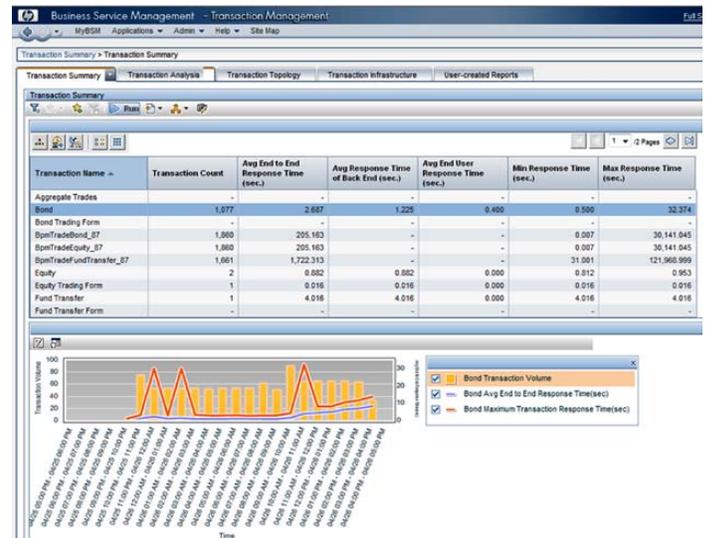
Diagnose and resolve application and transaction issues.

Application and transaction issues have a way of arriving unannounced at the exact worst time possible, displaying varied and disparate symptoms that tie up the few resources available just trying to get some focus on possible root causes. In an effort to reclaim these lost cycles, many organizations turn to instrumentation-level tools (generally referred to as diagnostics) but unfortunately often do so in a disjointed fashion focused on only one application or platform. This results in deep pockets of narrowly focused information that often goes unused due to the effort required to apply it to broad application and transaction performance issues.

HP Application Performance Management's diagnostic capabilities monitor, trace, and resolve performance issues, problems, and anomalies across the entire system—pinpointing bottlenecked components. It also gives organizations a powerful method to peer into the application tiers as they relate to the individual systems and sub-components, as well as granular tracking of transactions as they traverse from the end user to the mainframe backend. These tools can provide both historical context and application-specific details when an issue occurs. This provides traceability into issues and helps shorten the time it takes to repair an application or transaction issue and get the application back into service.

Figure 5.

HP Transaction Management health summary report of transactions



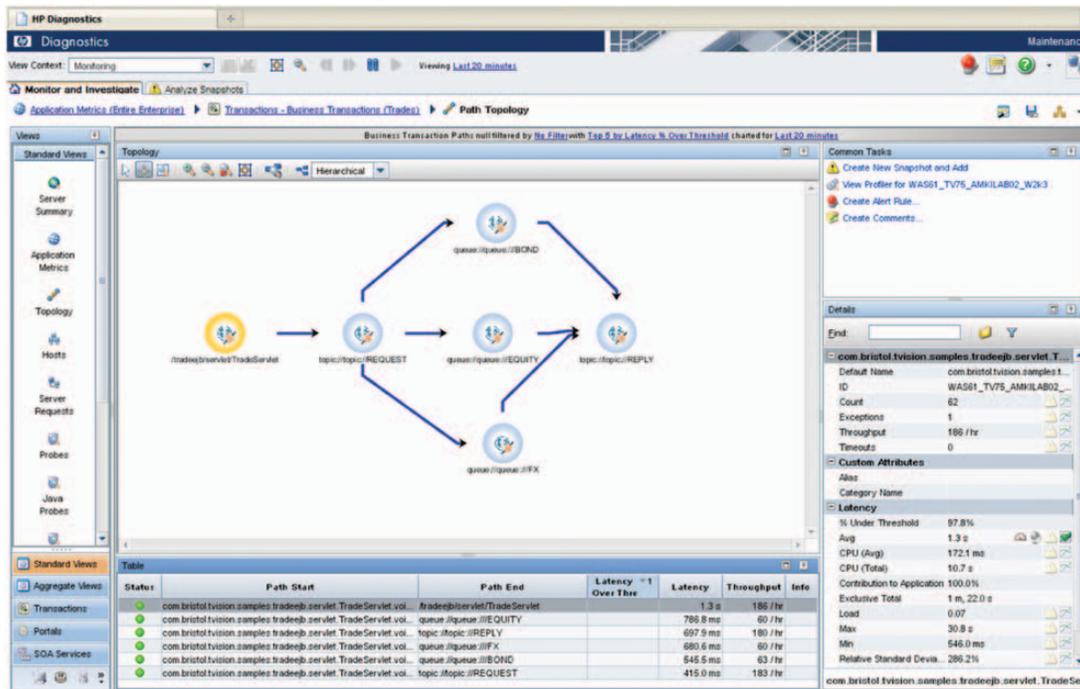
HP Diagnostics software

HP Diagnostics software enables you to seamlessly monitor, triage, and diagnose critical problems in composite applications—in both pre-production and production environments. This software collects performance and availability data from Java, .NET, and SAP platforms, isolating performance and availability problems and reducing mean time to recovery. It can be deployed with HP APM, HP LoadRunner software, HP Performance Center software, or as a standalone product.

HP Diagnostics helps you:

- Provide low-overhead monitoring, alerts, triage, and diagnosis of problems in heterogeneous environments (SOA, Web services, Java, J2EE, .NET, SAP, Oracle, WebSphere, WebLogic, and other applications) in pre-production and production environments
- Discover composite application topologies automatically
- Monitor and display both synthetic and real-user data
- Trace cross-virtual machine (VM) instances across technology stacks (J2EE, .NET, and SAP)
- Monitor, alert, triage, and diagnose problems with databases, including wait-time analysis for Oracle 10g
- Support Structured Query Language (SQL) and method-level trending to monitor SQL and method performance over time
- Collaborate with development organizations by providing data such as CPU time by method, heap dump, thread dump, exceptions, and advanced instrumentation control
- Perform advanced memory diagnostics, including allocation analysis, heap walker, and more

Figure 6.
Transaction monitoring across application components



HP Transaction Management: Transaction Tracking

HP Transaction Management’s Transaction Tracking (composed of HP TransactionVision, HP Diagnostics, and HP Real User Monitor) provides you with the ability to track, manage, and enable the end-to-end performance of your critical, unique business transaction instances. With this complete and granular picture of transactions as they traverse from end users to the mainframe backend, it enables you to:

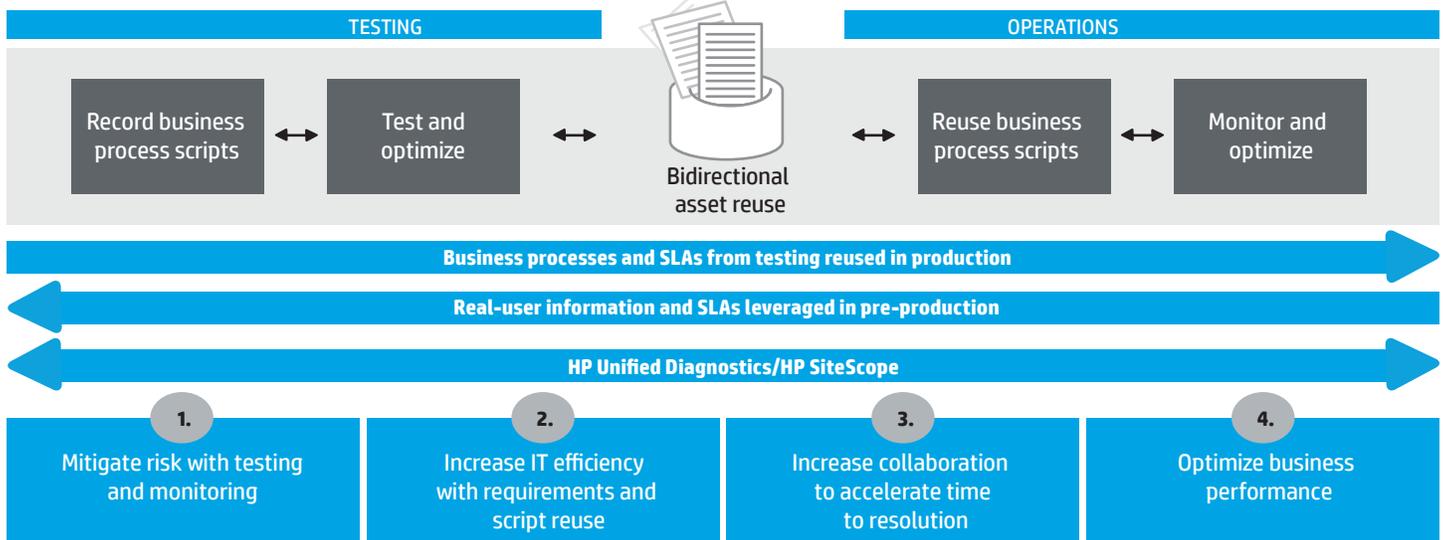
- Dramatically cut mean time to repair for your critical business transactions
- Definitely track both synchronous and asynchronous transactions as they span distributed and mainframe infrastructure
- Effectively collaborate with application development teams to resolve application and transaction issues effectively

Repair with automated remediation.

While saving money by eliminating time spent performing tasks manually is an obvious benefit, automation also enables unparalleled consistency in addressing complex IT problems. Consistency in executing IT tasks decreases errors, thereby reducing the risk of failing to meet business service level agreements for availability and system uptime.

Once you have determined the root cause, the final step is to resolve the issue. HP Operations Orchestration can automate the remediation of frequent tasks, increasing IT productivity. For a performance issue where the size of the JVM needs to be increased, or another JVM added, for instance, you could utilize a runbook to automatically make the changes.

Figure 7.
An application lifecycle approach increases collaboration and application performance.



HP Operations Orchestration

- Launches runbooks and automation flows to quickly repair known issues
- Provides an intuitive visual interface for easily designing, creating, and sharing flows and operations
- Allows you to manage diverse operating systems, databases, applications, and IT management tools
- Gives you a secure execution environment to run flows in a visually guided, scheduled, or automated mode

Prevent issues throughout the application lifecycle.

Starting in pre-production, quality and development engineers need ways to test applications against real-world conditions. Through these tests, engineers should be able to drill down to the component level, collecting concrete data to resolve likely performance issues associated with memory leaks, exceptions, or other common problems. In particular, engineers need the visibility to test every possible transaction for a given application, breaking down response times across all tiers of the IT infrastructure.

Once an application goes live, the same quality and development engineers used in pre-production can be leveraged again to solve application problems for real-world problems as they arise. Using the same tool set, these engineers can work with the context and knowledge required to resolve performance issues quickly. This reduces overhead and significantly improves operational efficiency.

An application lifecycle approach helps:

- Improve application performance and availability by integrating your processes for load testing, diagnostics, and end-user monitoring
- Mitigate risk and lower your cost of ownership for applications
- Track and capture actual end-user application usage and behavior
- Reduce risk due to new application rollouts and application and infrastructure upgrades
- Streamline the testing cycle so you can run more tests and resolve problems before they are introduced into production
- Increase efficiency for your development, QA, and operations teams
- Decrease redundant efforts by QA and operations in collecting KPIs for critical business processes
- Outsource your application testing and production monitoring due to resource constraints or a lack of in-house skills by using HP Managed Service Solutions
- Test and measure performance from outside the firewall
- Define performance objectives for new releases and upgrades

HP BAC Anywhere is a service delivered by HP Software as a Service exclusively for customers with on-premises instance of HP Business Availability Center (BAC) Software. HP BAC Anywhere supplies 24x7 real-time visibility into the cloud-based user's quality of experience, and securely reports metrics and alerts to the customer's HP BAC instance. To learn more, visit <https://portal.saas.hp.com/site/html/bacanywhere.mss>.



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HP Services

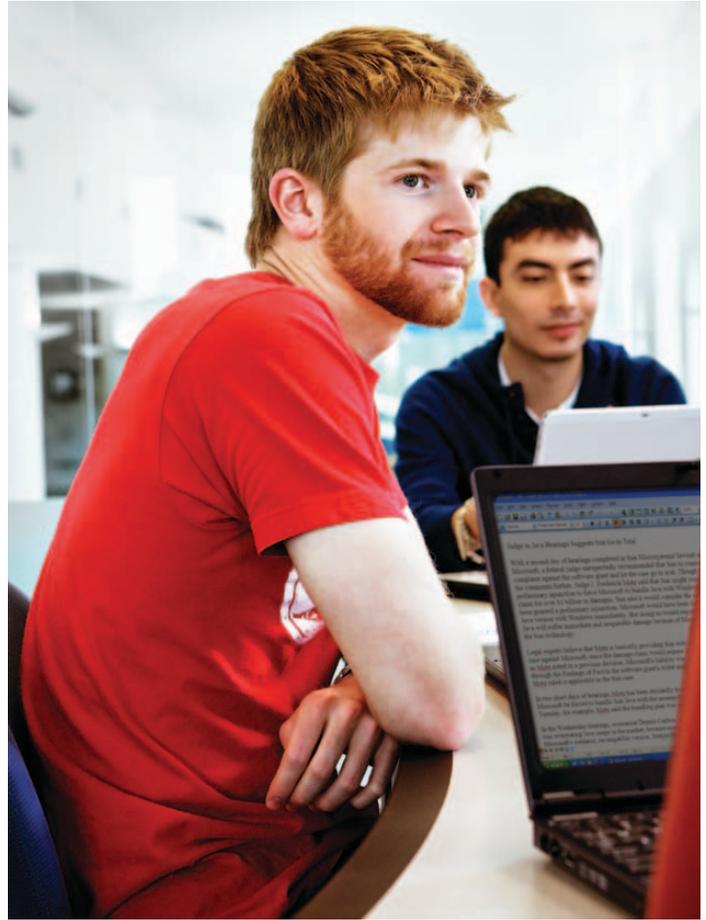
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