

# 5 Best Practices for Achieving Peak Performance in SAP Environments

## Table of Contents

Executive Summary.....	3
Introduction .....	3
SAP Environments: Growing, and Growing More Complex.....	3
The Challenges of Monitoring and Administration in SAP Environments.....	4
Best Practice #1: Get an Accurate Baseline.....	5
Best Practice #2: Be Proactive.....	5
Best Practice #3: Correlate Events.....	6
Best Practice #4: Optimize SAP for Users .....	7
Best Practice #5: Measure what Matters.....	8
Conclusion.....	8
About Nimsoft Monitor for SAP .....	8
Updateable Knowledge Base of KPIs and Recommended Thresholds .....	9
Consolidated, End-to-end Views of Performance .....	9
Efficient Deployment and Administration .....	9
Intuitive Insights .....	10

## Executive Summary

Given how deeply businesses rely on their SAP systems, it's simple to see that maximizing performance and uptime is critical. What's not so simple is figuring out how to understand, let alone optimize, performance in these complex, dynamic, and interrelated ecosystems. This paper offers five best practices that can help administrators more effectively measure and improve SAP performance.

## Introduction

When there are issues with SAP, there are serious issues for the business. Decision makers can't get the intelligence they need to make decisions. Finance can't close the books. Fulfillment can't ship. Customer service can't serve. Sales can't close business. That's why, on average, customers incur \$198,800 in lost productivity for each hour of SAP downtime<sup>1</sup>.

Consequently, reducing outages and speeding time to resolution can have a significant financial impact on your business. Once you see the devastating impact downtime has, you want to make sure that similar outages don't happen again. To do so, you need to monitor system performance and ensure issues are spotted, and addressed quickly. Ideally, you want to spot problematic trends in time to keep issues from happening at all. However, in today's complex SAP environments, this is much easier said than done. The following sections outline how SAP environments are evolving, and the monitoring challenges that are arising as a result.

*"When there are issues with SAP, there are serious issues for the business. That's why, on average, customers incur \$198,800 in lost productivity for each hour of SAP downtime."*

## SAP Environments: Growing, and Growing More Complex

SAP deployments are as complex as they are critical. SAP environments are comprised of multiple layers, which are interrelated and interdependent. Consequently, it can be difficult to quickly identify the source of an issue. SAP performance issues can stem from the hardware, operating system, database, Basis layer, or business process layer. In addition, custom development running in NetWeaver can often be where performance issues originate.

Plus, system administrators have to manage and track all the connections between these disparate systems and layers. For example, an organization may export data from the SAP ERP Central Component (ECC) to generate BI reports, or populate a NetWeaver portal. In SAP environments, each layer and system can be managed separately, and by different individuals, both within and even across organizations, and still the performance of one element may be affected by the performance of another. That's the complex nature of SAP.

Compounding matters is that this complexity has grown in recent years, and this growth shows no signs of abating. Further, monitoring SAP environments continues to grow more challenging and critical. Following are a few reasons:

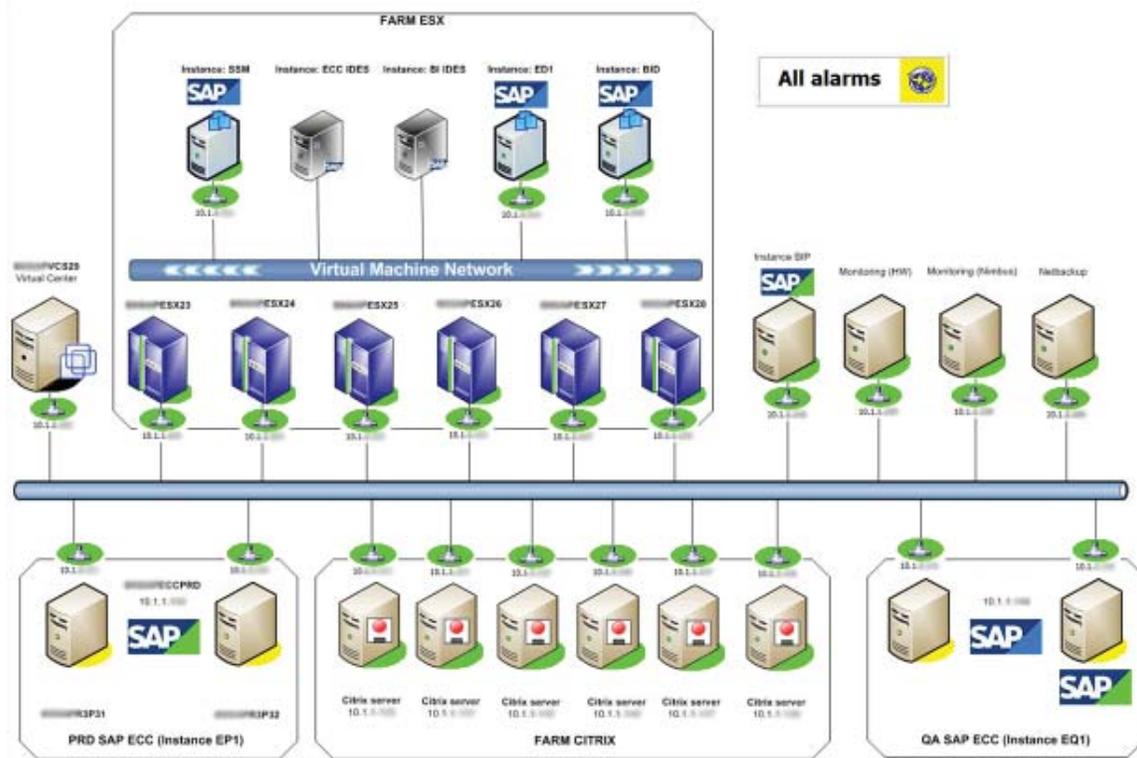
- **Increasingly integrated.** SAP continues to introduce new products and modules. As each new solution is deployed, more integration with additional systems and tiers follows, which leads to further complexity. Further, over time, organizations increasingly need to integrate SAP with external elements, for example corporate databases, storage systems, or cloud services.

<sup>1</sup> SAP, "SAP Insight: Supporting Business Innovation while Reducing Technology Risk", <http://www.sap.com/malaysia/solutions/safeguarding/pdf/SupportBiz20sep.pdf>

- **Increasingly integral.** Over time, organizations grow more reliant on SAP. As a result, downtime and performance degradation have gone from being business critical to business fatal.
- **Increasing in scale.** SAP's increasing footprint in the enterprise leads to more users, more applications, and more data, which can place increased strain on these environments.
- **Increasingly distributed.** For many enterprises, SAP infrastructures are part of an interconnected system of global deployments. Typically, an organization will have complete SAP landscapes in multiple countries and regions. Ensuring reliable communication across these distributed landscapes is therefore critical. Plus, given their geographic location, even relatively moderate performance issues can have a huge impact on other regions and users.

## The Challenges of Monitoring and Administration in SAP Environments

As outlined above, SAP environments are growing more complex, more integrated, and more essential. In most organizations, however, while the challenges may grow, the resources available to monitor and administer the environment do not. Often, there may be one administrator for databases, one for the network, one for applications, one for backup, one for ECC, and so on—across the entire landscape. Consequently, administrators need to become more efficient, so they can continue to accommodate increasing volumes and complexity. This holds especially true for monitoring. However, administrators have traditionally been hampered by manual monitoring processes.



*To effectively troubleshoot issues within complex SAP environments, administrators need to be able to have a comprehensive view of relevant performance metrics from across all the tiers and infrastructure elements.*

In the past, administrators often had to rely on running manual transactions to test system availability. A database administrator may use direct data objects to test a database query, or use DB02 to look for issues. This type of testing meant that, rather than consistently tracking on a regular basis, administrators manually made ad-hoc spot checks. For example, they may do some testing in the morning, and then again later in the day—and keep their fingers crossed in the meantime.

In some organizations, administrators have used SAP Solution Manager, but this type of solution is only designed to monitor SAP systems, not all the associated systems and elements in the infrastructure. In the following sections, we'll look at some best practices for monitoring and optimizing performance in complex SAP environments.

## Best Practice #1: Get an Accurate Baseline

*Baselines: The only way to improve performance is to understand it. What it used to be. How it's changed.*

As mentioned earlier, SAP environments are comprised of a number of different, yet interdependent elements. At any given time, an issue encountered by a user could be due to hardware, software, SAP components, or underlying infrastructure elements.

To begin to optimize performance, administrators need to start with an accurate picture of "normal" performance. By establishing effective baselines, administrators can more quickly identify when a problem arises.

Further, these baselines are essential in managing through changes in the environment. If an organization has effective baselines in place, they can see whether and how changes in the infrastructure may affect performance. For example, after an organization implements a new storage system, they can measure response times, and compare that performance metric with the baseline they had before the rollout of the new system. They may see that SAP performance went from 300 ms to 1.5 seconds after the new system was installed. Having this before-and-after measurement makes it easy for administrators to spot the issue and understand how to address it. Alternatively, if response times stay the same or improve, development teams can be confident that the rollout of the new infrastructure element was a success.

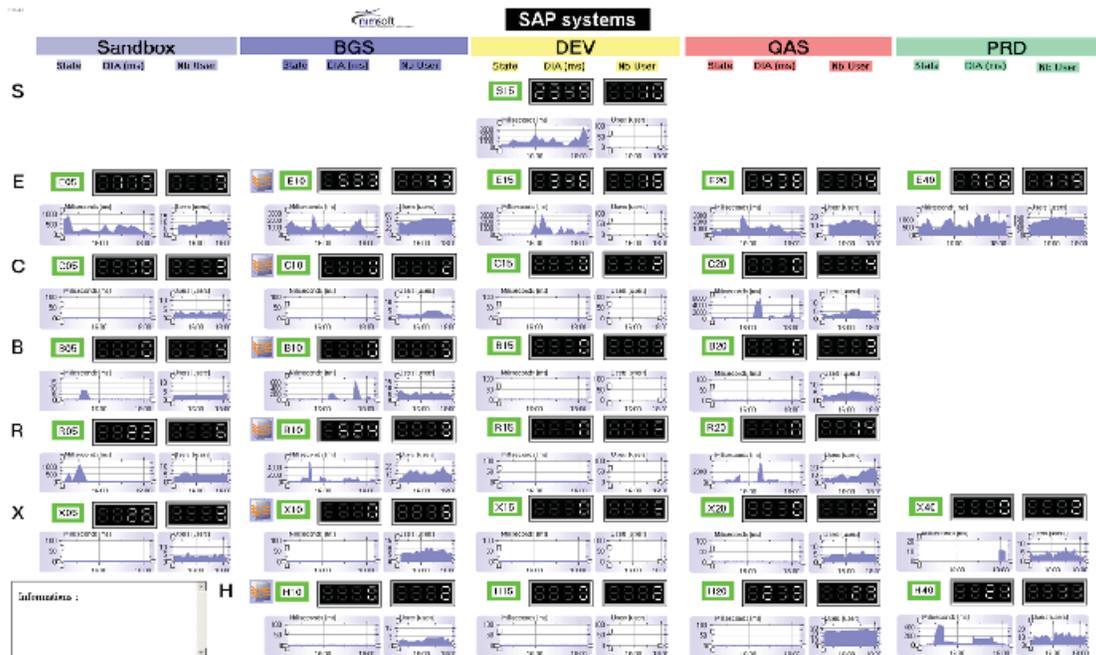
## Best Practice #2: Be Proactive

Historically, in many SAP environments, administrators would only find out about issues after they've had some type of impact. Typically, the business user encounters an issue and reports it to the IT team. Thus, the clock on that \$198,800 per hour expense outlined earlier has already started ticking, and IT needs to enter panic mode to find and fix the issue.

In some cases, IT teams have deployed monitoring tools, and so administrators may have started finding out about issues before users were reporting them, but the reality is that administrators were only finding out about issues after they've occurred.

*Downtime is too costly. Don't wait for it to happen. Proactively manage performance, so you can keep issues from arising in the first place.*

To start to optimize performance and availability, IT administrators need to more proactively manage their SAP environments. They have to detect issues before they impact the business. To do so, administrators need to be able to spot trends, compare them to an accurate baseline, and understand when indicators are pointing to a potential issue—and then act before conditions start to degrade. Following are two keys to making this happen:



*Having accurate baselines is vital in understanding the implications of changes made in the multi-layered SAP environment.*

- **Automation.** Proactively managing SAP environments requires several steps, including collecting data, filtering and analyzing information, and acting on it. The more these various steps can be automated, the more proactive administrators can get. For example, by setting up automated polling, administrators don't have to manually gather and sift through performance metrics. With automated alarms, administrators can be notified immediately when certain conditions arise. This automation is key to enabling administrators to more quickly spot and address issues.
- **Contextual awareness.** When setting up automated monitoring, administrators need to do so with an understanding of the context of SAP performance. For example, in situations where a lot of custom development work is being done or refreshed, ABAP short dumps can be very common. However, these dumps can also be the sign of a critical issue arising. Thus, one dump during an afternoon may not be a problem. On the other hand, 20 in less than two minutes may signal a very critical issue. Administrators need to track these types of activities with this context in mind, so they can distinguish between isolated blips caused by user error, and critical issues.

## Best Practice #3: Correlate Events

In SAP environments, administrators have historically tracked and analyzed performance by looking at specific systems. However, when viewing these disparate systems in isolation, it can be difficult to fully understand what ultimately matters: the end-to-end performance of the environment and the experience the user is actually having at any given time.

The following real-world scenario illustrates the shortcomings of a

*Binoculars and a microscope: To fully understand complex SAP deployments, you need to have a cohesive view of the entire landscape.*

system-specific approach:

*An administrator began noticing an error hitting a server's operating system. Working with the storage administrator, he looked to see whether there was an issue with inputs being sent to storage. The administrator looked at the main storage and all indicators showed there weren't any issues. Several more errors occurred, so the lead administrator asked the storage administrator to check the system again. Again, the administrator checked main storage and everything looked fine. Ultimately, the errors persisted, and ended up having an impact on the rest of the ecosystem, bubbling up from the OS, to the databases, to Java, and ultimately creating issues for users.*

*Over the course of several hours, database administrators, storage administrators, and application administrators were called in, but they were checking their own views of disparate systems, and everything seemed to check out fine. Ultimately, a storage administrator thought to check the disaster recovery servers, and discovered that was where the issue was originating. A storage controller error was the culprit.*

This scenario illustrates the huge penalty associated with not having a unified, correlated view of the entire environment. Ultimately, end users suffered due to a sustained outage because the issue wasn't discovered in a timely manner. Further, team members from across the IT organization also took a huge productivity hit, spending hours fruitlessly searching for the cause of an issue.

By correlating monitoring metrics from across the ecosystem, administrators can far more quickly spot exactly where the source of an issue is. This requires establishing a common monitoring layer that aggregates event collection from across the environment.

## Best Practice #4: Optimize SAP for Users

Experienced SAP administrators understand that a lot of performance issues are ultimately caused by end users. During a given day, users are generating hundreds of jobs, requiring communications between such systems as BI and ECC, exporting and importing files, doing batch inputs, submitting queries, and so on. The demands of these ongoing activities can be compounded during such peak periods as monthly close, where a financial group will be doing a lot of close-related activities, such as printing statements. In these scenarios, a big job or a user error can bring performance to its knees. For example, instead of requesting a report for a one-year period, a user may accidentally generate a report spanning ten years. When coupled with the other workloads happening in parallel, this one user error can ultimately have a significant impact on the entire system's performance.

*User errors will happen. Mitigate the penalty for the business by intelligently managing capacity and spikes.*

To contend with both ongoing spikes and the potential impact of user errors, administrators need to ensure they have adequate capacity and optimize each component in the infrastructure. To uncover optimization opportunities, following are some key areas administrators need to check:

- **User connections.** Administrators should use load balancing for user connections, which can help to ensure user interactions are handled optimally.
- **Dialog jobs.** IT teams should avoid having a lot of users running jobs in SAP Dialog programs. Long running Dialog jobs can have an immediate and significant performance impact.
- **Background jobs.** IT should establish windows for larger jobs, and ensure those windows don't overlap with scheduled backups. Further, for global implementations, usage patterns of different geographies also need to be accommodated.
- **Interfaces and RFCs.** Administrators have to ensure reliability of system interfaces. For example, the IDocs (Intermediate Documents) interface, which is used for connections between multiple systems and tools and for electronic data interchange,

represents a critical integration point that must be tracked and optimized.

- **Recurring workloads.** If an SAP environment regularly has significant traffic peaks during the year, for example during monthly closing in finance, administrators need to work with the business to plan for and optimize the process and resources needed to support this activity. For example, if a batch of jobs is running at the end of the month, that activity could be optimized. Faster, “tier 0” storage, or additional memory and CPU can be allocated to the systems processing these batch jobs during specific periods to ensure the jobs run optimally.
- **Long-running reports.** Administrators should analyze long-running reports to identify opportunities for optimization. For example, in a specific report, an ABAP programmer may have neglected to use indexing, which could help speed report generation.
- **Printing.** Wherever possible, administrators should migrate printing jobs outside of SAP, which can free up resources for workloads that need to happen within the SAP environment.

*Key performance indicators or key perception indicators: A positive end-user experience should be the ultimate goal of any SAP performance optimization effort.*

## Best Practice #5: Measure what Matters

In large, complex SAP environments, millions of metrics can be generated. To be effective, however, administrators have to understand which metrics really matter—and track and work to optimize those. These key performance indicators (KPIs) should represent the basis of service level agreements (SLAs) that the IT organization uses to report on performance.

System availability is obviously a critical measure. IT teams should also track the actual user experience, including application response times and availability. In addition, managers should look at doing customer perception surveys through the service desk, so they track what users think about the service levels they’re experiencing. Finally, organizations need to track SLA compliance, and have visibility when trends are pointing towards a breach, so they can mitigate issues in advance.

## Conclusion

Organizations have a lot to gain by reducing the downtime of their SAP systems. By adopting the approaches outlined above, SAP administrators can begin to more effectively understand, manage, and improve performance.

### *SAP Optimization: 5 Best Practices*

*#1: Get an Accurate Baseline*

*#2: Be Proactive*

*#3: Correlate Events*

*#4: Optimize SAP for Users*

*#5: Measure what Matters*

## About Nimsoft Monitor for SAP

Nimsoft Monitor for SAP offers the comprehensive capabilities your organization needs to realize optimal performance from all your SAP-powered business services. Nimsoft Monitor gives your administrators the extensive monitoring coverage they need to effectively track the entire SAP environment—and all the associated infrastructure elements SAP relies on to perform optimally. Further, it offers the sophisticated insights that enable your team to take full advantage of the monitoring data captured, so you can respond to issues more quickly, and gain the insights needed to plan for and preempt issues before they have an impact on users. Following are some of the key features of Nimsoft Monitor for SAP.

## Updateable Knowledge Base of KPIs and Recommended Thresholds

In order to help ensure administrators are tracking the most important metrics, Nimsoft Monitor comes with an embedded, updateable knowledge base of KPIs to monitor—and their associated thresholds. The solution was jointly developed by Nimsoft and AGENTIL, a firm that specializes in helping organizations deploy and optimize their SAP infrastructures.

The solution's KPIs and thresholds reflect industry best practices—they have been defined by AGENTIL's SAP experts and are based on hundreds of SAP deployments in a range of business environments. The most relevant performance indicators have been chosen, and cover the entire SAP system: jobs, IDocs, updates, dumps, spools, backup, enqueue, database, and more. Further, the knowledge base is easily updated, so you can add new KPIs or adjust thresholds as your SAP deployment evolves.

## Consolidated, End-to-end Views of Performance

Nimsoft Monitor offers a single platform that can capture monitoring data from across the entire SAP ecosystem and beyond. Nimsoft Monitor offers comprehensive coverage of these areas:

- **SAP environment metrics.** Nimsoft Monitor leverages the data generated by the CCMS, including SAP services, buffer metrics, and communications; CCMS alerts and monitoring trees; status of databases, file servers, operating systems, and application servers; and security audit logs and security-related messages in system logs.
- **Data center infrastructure components and cloud services.** Nimsoft Monitor is a comprehensive platform that can track not only SAP environments, but virtually all your services running in the cloud and any component within your data center—including servers, applications, databases, network devices, converged infrastructure, virtualization platforms, and more.
- **End user response.** Nimsoft Monitor can execute synthetic transactions at user-defined intervals and provide detailed measurements of each step of a given process. If any step of a transaction meets or exceeds a threshold, Nimsoft Monitor can automatically generate an alert and even have appropriate personnel notified via SMS or email. Nimsoft Monitor can measure end user response times across all common SAP architectures, including client/server, Citrix terminal server, and Web.

With the solution's end-to-end monitoring capabilities, application response times can be broken down across the multiple tiers of the SAP architecture. Through flexible graphing capabilities within the Nimsoft Monitor console, you can easily view relative response times of each aspect of the environment. If performance degrades in a particular tier, Nimsoft Monitor helps pinpoint the culprit immediately.

## Efficient Deployment and Administration

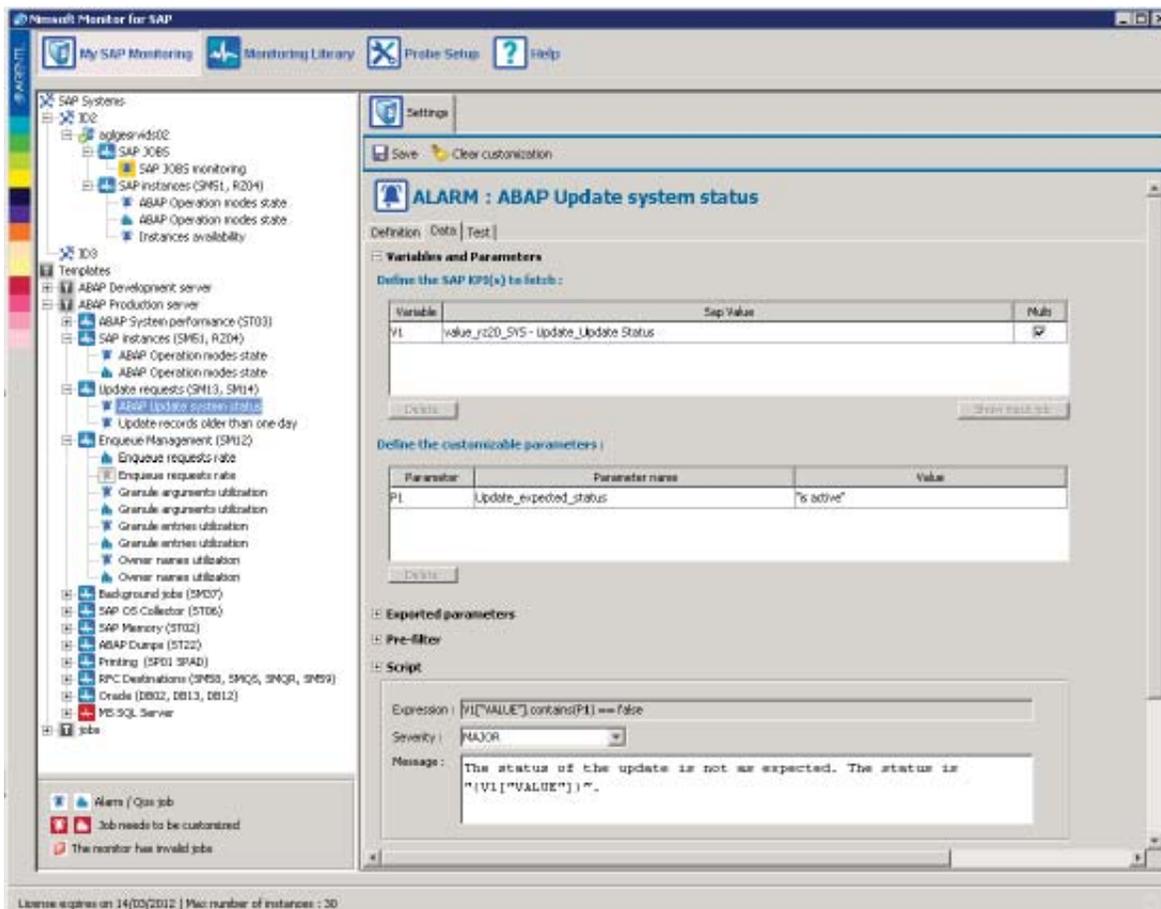
Nimsoft Monitor enables your organization to enjoy maximum benefits from SAP monitoring, while minimizing the time and effort required to deploy and administer the system. Nimsoft Monitor offers a number of features that make SAP monitoring fast, easy, and efficient:

- **Streamlined, unified administration.** Nimsoft Monitor provides automated access to multiple KPIs within SAP environments, so you don't have to log into multiple locations and manually run and analyze SAP performance traces.
- **Familiar service modeling.** The solution's discovery and service modeling of the SAP environment is designed to align closely with the CCMS model, so that SAP administrators will be in familiar territory when using Nimsoft Monitor.
- **Tightly integrated.** Nimsoft Monitor uses standard SAP-approved communication protocols (SAP Remote Function Calls) to retrieve performance information. In addition, Nimsoft Monitor can efficiently leverage the data gathered through the SAPControl Web service.

- **Flexible, efficient architecture.** Nimsoft Monitor is designed to operate in demanding, high-volume production environments. The solution’s agentless monitoring leverages the SAP Java connector for remote data collection.
- **Powerful configuration templates.** Nimsoft Monitor offers powerful templating capabilities that make it faster and easier to set up and modify monitoring settings. For example, Nimsoft Monitor provides templates for end-user monitoring by location, by access networks, and other components.
- **Secure remote monitoring.** Nimsoft Monitor connects to the SAP system with a dedicated SAP authorization profile. This, along with the controls found in Nimsoft Unified Management Portal, enables authorized internal staff or third-party resources to monitor SAP performance from anywhere in the world—without risking unauthorized access to confidential data.

## Intuitive Insights

Not only does Nimsoft Monitor offer comprehensive monitoring coverage, but it provides the sophisticated presentation capabilities that ensure you make the most of this data. Nimsoft Monitor offers a number of different presentation options, including executive dashboards, geography-based views, operator consoles, toolbar notifications, and reports. The solution offers these features:



*Nimsoft Monitor provides administrators with ready access to monitoring metrics from across the SAP environment.*

- **Historical views.** Nimsoft Monitor stores all measurement, baseline, and threshold data in an embedded performance management database (PMDB), according to the policies you've established. Because Nimsoft Monitor stores performance data over time, you gain an effective baseline of normal SAP performance.
- **Sophisticated SAP alert management.** The solution continuously monitors SAP alerts and integrates alert status into the service model. As a result, the solution offers added value through service impact correlation, and it enables administrators to establish baselines and trend alerts. SAP alerts can be assigned, tracked, and cleared from the Nimsoft Monitor operator console.
- **Real-time reports.** Nimsoft Monitor includes real-time reporting capabilities that are configurable by the user community. Any measurement or set of measurements displayed in a graph may be quickly saved as a report. Nimsoft Monitor offers a range of reports, including Dialog response time, SAP application server health, transaction reports, and SLA reports.
- **Intelligence for setting effective thresholds.** Using statistical calculations based on the performance metrics gathered, Nimsoft Monitor generates baselines at all levels of the service model, including service, transaction, SAP application server, database, systems, and network. To each baseline, multi-tier thresholds can be applied that provide alerting of performance deviations, relative to normal conditions, by time of day and day of week.

## About AGENTIL

Founded in 2006, AGENTIL works with clients to design, build, integrate, manage, and optimize SAP and IT service management systems. The company's expertise in managing SAP and other IT environments helps global 500 clients improve productivity and increase operational efficiency. A Nimsoft Unified Alliance Partner, AGENTIL also provides a comprehensive SAP monitoring solution that gives customers a unified view of SAP and associated networks, servers, and databases.

## About Nimsoft

Nimsoft provides integrated, IT management as service solutions for businesses and service provider customers globally, including 1&1, CDW, SoftLayer, SunGard Availability Services, Sur La Table, TriNet, and Virgin America. The company's Nimsoft Unified Manager is an industry-leading solution that helps organizations easily monitor and manage IT services in increasingly complex business environments. Nimsoft solutions integrate with existing resources from the data center to the cloud, and are available on a pay-as-you-go basis. For more information, visit [www.nimsoft.com](http://www.nimsoft.com).

<b>North America</b> <b>Headquarters</b> U.S. toll free: 1 877 SLA MGMT (752 6468) 1 408 796 3400  Email: <a href="mailto:info@nimsoft.com">info@nimsoft.com</a> Web: <a href="http://www.nimsoft.com">www.nimsoft.com</a>	<b>United Kingdom</b> +44 (0) 845 456 7091  <b>Norway &amp; Northern Europe</b> +47 22 62 71 60  <b>Germany</b> +49 (89) 90405-170	<b>Australia</b> +61 (0)2 8898 2943  <b>Brazil</b> +5511 5503 6243  <b>Mexico City</b> +52 (55) 5387 5406	<b>Singapore</b> +65 64328600  <b>New Delhi</b> +(91 11) 6656 6667  <b>Mumbai</b> +(91 22) 66413800
---	---	--	--