

White Paper

Monitor 'Real' User Experience with SAP Solution Manager Tools

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If you have, or are planning to, invest in documenting your SAP centric business processes in SAP Solution Manager, you might be interested in understanding some of the perhaps less obvious (and less touted) benefits of having this information well defined.

Many customers who have established a comprehensive technically focused monitoring solution for their SAP landscape are often surprised when they continue to receive reports from the end-user community about system performance and the resulting user experience. They have already invested significant time and effort into optimizing the operational performance of their SAP systems, so why do these activities not yield the expected results in increasing user satisfaction?

In today's complex IT landscapes, it is rare for end users to be located (both physically and logically) close to corporate data centers. Technological enhancements have enabled businesses to consolidate diverse IT solutions into single data centers, serving a disparate user base potentially spanning the globe. SAP customers are no exception to this rule, and even those continuing to operate several regional instances tend to have users based across a significant geographical area. End users, therefore, are likely to need to traverse more complex infrastructure to interact with an SAP system, from a higher number of geographical user locations, and this makes understanding how users perceive system performance quite a challenge.

How can we get a greater understanding of performance from an end users' perspective? And, more importantly, can we proactively monitor this perception of system performance in order to intercept potential

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issues and take corrective action before it has a negative business impact.

There is a solution to this problem, and you might be surprised to hear that it is available free of charge from SAP themselves¹. It's available via your Solution Manager system, and is called End User Experience Monitoring (EEM).

Challenges of Supporting a Remote User Base

SAP Support teams often have a good understanding of core system performance. There are many tools on the market to enable a great deal of visibility, in real time, of how the components of an SAP landscape are performing. And, generally, performance is good from this perspective. The dashboard is always green, so why are my users still complaining?

There is, I believe, a distinction to be made between what we'll term 'core system performance', i.e. the perspective of system performance as determined by a centralized monitoring solution, often located on the same network segment (let alone a different data center) to the system being analyzed, and the real perception of system performance across the end user population.

Let's take the subject of system availability. Typically, the definition of a system being considered available is that core system components and services are running and that *users can access the system*. Modern monitoring and alerting solutions, such as Technical Monitoring via SAP Solution Manager, go some way to answering the second part of this definition by checking that logon services are available, but again this is only from the perspective of the monitoring system (and in some cases, from the perspective of the Diagnostics Agent executing the monitoring which often resides on the same host as the monitored system).

Events/Metrics	Rating	Value
 SMR-ABAP		
System Availability		
ABAP System Availability		
ABAP Message Server Http Availa... 		[RC=200] URL http://resnotwin001.corp.ra...
ABAP System Remote RFC Availab... 		RFC Ping successful.
Status propagated from Technical Instance		
Status propagated from Database		

Figure 1: ABAP System Availability metrics in SAP Solution Manager Technical Monitoring.

But does this actually confirm that end users can log onto the system? What about infrastructure issues that might prevent communication across the corporate network? Or a change to a local firewall that inadvertently prevents access to a site location or even an entire region? Conversely, how do the support teams know if all locations are affected

¹ Providing you have a valid SAP maintenance agreement.

when a report of a system being unavailable is received, or just one office in one location.

The question becomes more complex when addressing system performance. There are so many components between the end user and the SAP solution that understanding performance of the back-end SAP systems alone doesn't provide the insight to be confident that the end user experience is good.

The key is to distinguish between the core, local system performance and the perception of system performance across end user communities and locations.

This is where the End User Experience Monitoring solution can help. The solution provides a centralized view of the distributed perception of system availability and performance from an end user's perspective.

SAP End-User Experience Monitoring – The Functional Concept

We could try and gather this data directly from our users themselves, via surveys or specific testing exercises, but this information will always be subjective and inherently unreliable. Furthermore, users have day jobs, they are busy and not in need of further distraction (nor a reduction in productivity!), and don't work 24/7/365.

We need a different data source than our human users. We need to be able to replicate typical, or at least key, user activities across the systems that we need to monitor (typically the productive landscape) from those remote locations. This is achieved by deploying EEM robots (a Diagnostics Agent, running in a special mode) within the locations from which we want to understand performance, and empowering them to execute transactional steps in the target back-end system, thus generating a reliable synthetic representation of an individual user load. What's more, this load is applied continuously and constantly, is unobtrusive, and is almost indistinguishable from real user load in the system.

The load itself is generated through the use of scripts that are executed by the robot on a periodic basis. The scripts are recorded and parameterized, which allows for rapid deployment across locations once compiled. A robot may execute several scripts, across different target systems (perhaps of different technologies), in order to represent business process execution in that location.

This is where having a well-defined, accessible process library really assists in adopting the functionality. Understanding the key processing taking place via a specific user community, housed in a specific location, can expedite the deployment design, whereas a detailed definition of the steps (including referenced work instructions and training materials) will enable quick and accurate script development.

Deployment of such robots across the end user locations now provides us with a reliable, repeatable and, most importantly, comparable data source in each location. The results of each script execution is then reported back to the SAP Solution Manager system, where a centralized view of all results can be displayed and interrogated.

SAP EEM - Analysis Results

The EEM application is accessed via the Technical Monitoring work center in SAP Solution Manager. It comprises a central console, built on Adobe Flash, to flexibly display numerous views of collected availability and performance data according to analysis requirements. The user interface can also be customized, allowing the selection of a number of pre-defined applications that can be used to view different representations of the data. The key feature of this application though is that the data is centralised, readily available and delivered in real-time.

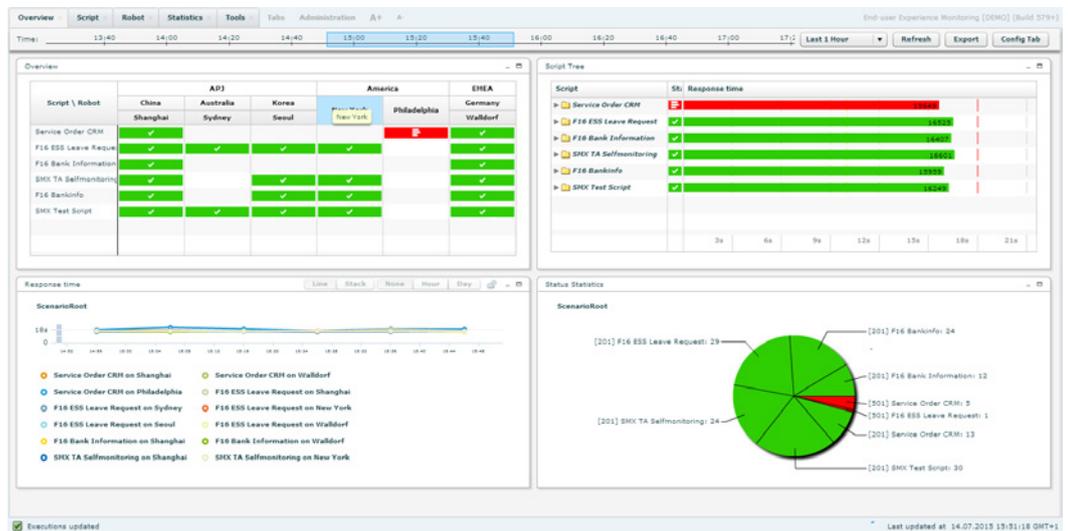


Figure 2: EEM Application Overview Screen

From this dashboard style overview screen, any executions, or measurements thereof, that do not operate within the defined thresholds can be clearly identified. In the example above, a robot in Philadelphia running a script to execute a service order process in CRM has identified a problem, signified clearly by the red status. This can be expanded to understand more about this problem, as shown below, to provide information on individual executions or even individual steps within an execution.

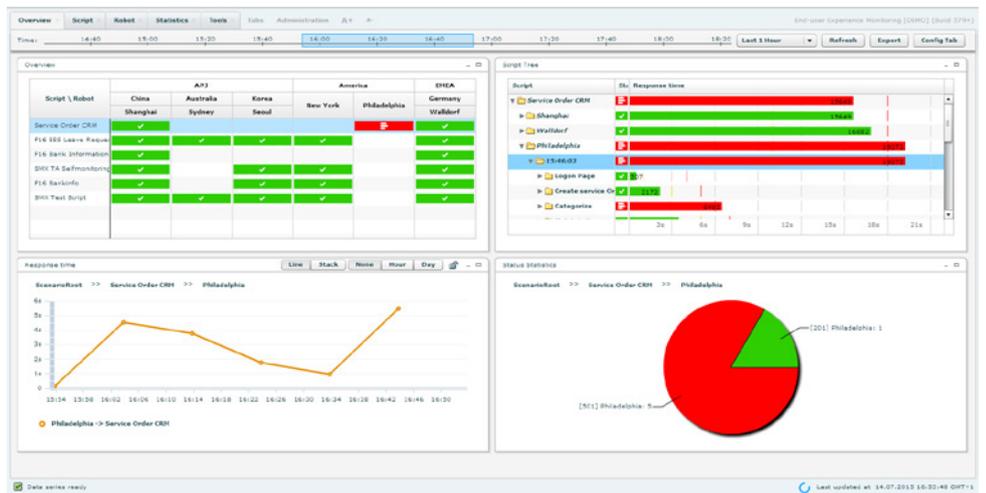


Figure 3: Focusing in on a failed execution

Alerting Infrastructure

The End-User Experience Monitoring is directly integrated with the Monitoring and Alerting Infrastructure within SAP Solution Manager, enabling alerts to be automatically generated and presenting in a unified Alert Inbox alongside any other alert type from the various monitoring application within the system. Support users therefore only need to look in one place to understand whether any system issues are present, or have passed unnoticed, which is something that core SAP support teams have craved for a long time. As such, we also benefit from the common Alert Inbox functionality, including intelligent alert grouping to prevent flooding, the ability to assign a processor and track resolution progress (like a mini incident) or even to integrate with a full IT Service Management tool (within Solution Manager itself, or a third party solution).

Integration with E2E Trace Analysis

The EEM application user interface is highly dynamic, with screen areas reacting to selections made in a separate pane, to give you quick and direct access to the information you need for an initial analysis of any reported issues. But what if we need more detail to really diagnose the root cause of the problem? Now we know there is a problem, but how can we understand more about which component is at fault, and what the corrective action might be?

For this purpose, integration with the E2E Trace functionality exists to enable a deep analysis of any reported issues.

During each execution of a script, the EEM robots include a special instruction to the executing system asking it to record, in detail, the activities performed by the robot. This trace logging is applied only to the activities of the robot, thus preventing the significant performance overhead of system wide tracing activities. These results are fed back into the Solution Manager system and made available in the E2E Trace

Analysis application, which can be launched directly from the EEM application in an integrated fashion.

The information displayed via E2E Trace Analysis is far more granular. A script execution is broken down into discrete steps that can be individually analyzed, or a semi-automated analysis of the full script execution can be performed to highlight the steps that consumed the most execution time. Not only this, but information is taken from all systems involved in the script execution (which can include some non-SAP technologies) and this enables us to determine if system processing is causing the performance impact, or whether network infrastructure is to blame.

This helps to identify the problematic component. The next phase of the analysis is to understand the root cause of the issue within the faulty component. The tool provides a breakdown of the problematic step to understand in which component the processing time has been consumed.

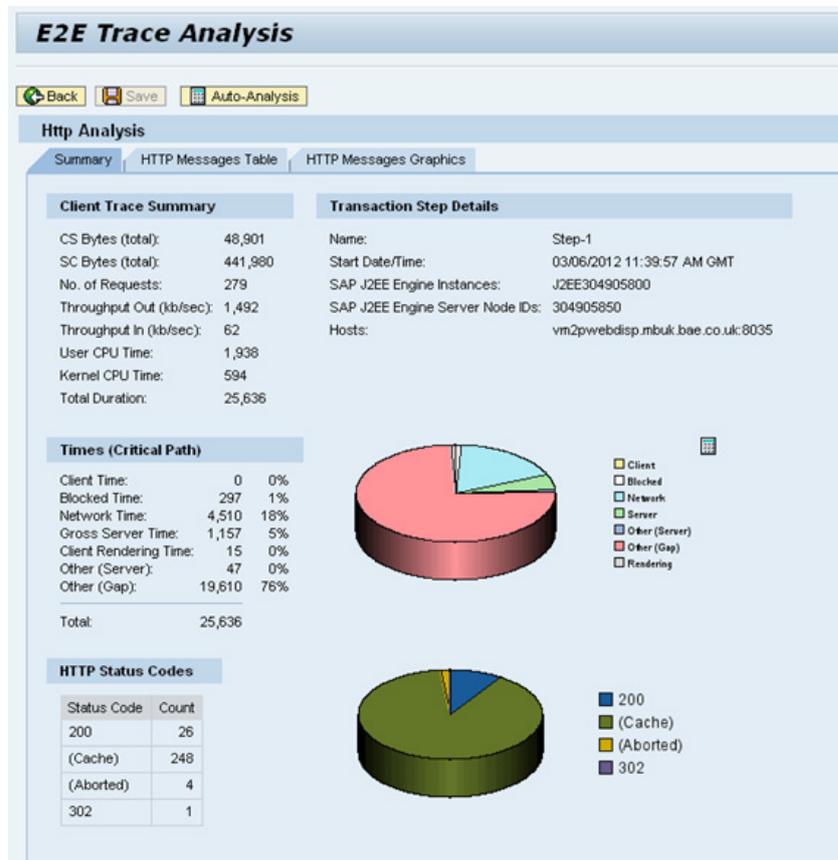


Figure 4: E2E Trace Analysis: Response Time Composition demonstrating the processing breakdown of an HTTP request based step in an SAP Java application

Reporting Capabilities

SAP EEM utilizes the SAP Business Warehouse (BW) component contained within the SAP Solution Manager system. The system uses the BW reporting capabilities to present the collected data in the form of interactive aggregated historical reports, which supports detailed trend analysis over time. With this functionality we can also feed reporting on

any service agreements from a locational and critical business process perspective, which can help demonstrate the value of IT services to the business.

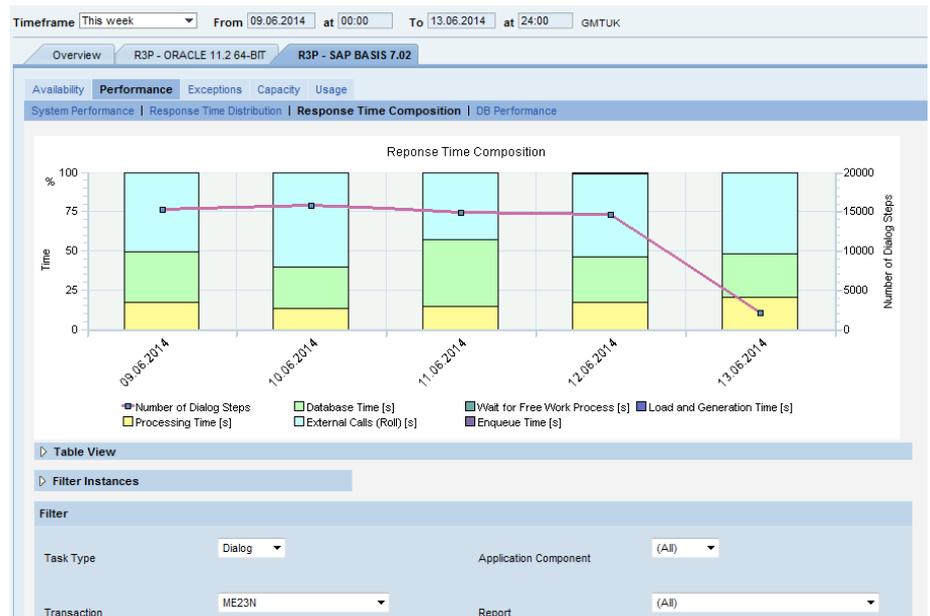


Figure 5: Typical BW trend analysis reporting of EEM measured response time composition

Conclusion

As technology has enabled businesses to operate in more locations, in a global setting, this has naturally led to a more distant, diverse and remote IT operating user base. The complexity of IT infrastructure that end users must traverse in order to execute core business functions in a SAP centric IT landscape has increased, and ensuring the user base receives good quality, well performing IT services is no longer simply measurable by assessing core system performance within the data centre.

The SAP EEM and integrated functionality provides the SAP support organization with a tool based mechanism to reliably replicate and proactively assess the experience that real end users are experiencing. In addition, the tool assists greatly in understanding the root cause of a potentially complex incident, identifying the faulty component and providing insight into the technical root cause. This removes any ambiguity over the responsible support team and enables incidents to be routed to the correct team quickly, removing any arguments over responsibility and reducing the time required to investigate and resolve such incidents. What's more, you'll be reducing incident volumes by proactively responding to alerts, minimizing the impact of any issues on business users.

All this helps you keep your end users working productively, and when end users are productive, the business is productive, IT ROI is increased and TCO reduced.

Additional Information

EEM WIKI [online]. Available:

<http://wiki.scn.sap.com/wiki/display/EEM/Home>

Last accessed: 27th September 2015.

SAP EEM Demo [online]. Available:

<http://wiki.scn.sap.com/wiki/display/EEM/EEMDemo>

Last accessed: 27th September 2015.

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