



### Company

BPA Solutions

### Industry

CRM Software

### Location

Switzerland

### Application Platform

Microsoft SharePoint

### Challenge

Detailed “White box” testing of the BPA SharePoint CRM application to precisely identify the root-cause of performance issues

- The SharePoint framework itself
- Architectural issues arising from interaction between custom lists & views, custom WebParts and SharePoint components

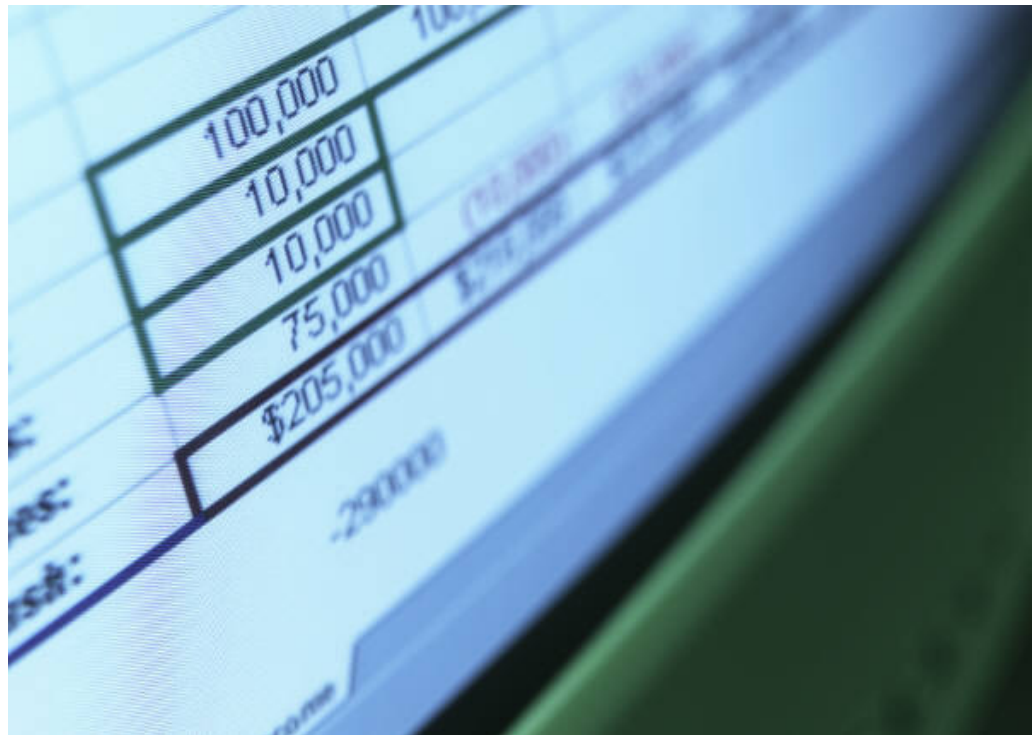
### Solution

**dynaTrace** to diagnose performance issues in BPA’s SharePoint-based CRM application, which occurred with growing account data in the CRM repository

### Results

Significant performance improvements in standard SharePoint components and custom WebParts

- Improved the performance of querying account data from 2.5 seconds to a few milliseconds
- Reduced memory consumption and memory usage through allocating fewer short-living objects, resulting in fewer garbage collection runs and sporadic performance issues
- Understand the performance implications of BPA’s custom Web Parts when used in SharePoint
- Reduced network communication overhead between browser and server
- Improved performance by understanding impact of configuration issues



BPA Solutions was founded in 2001 in Switzerland and is headquartered in Neuchâtel. BPA Customer Relationship Management (BPA CRM) is a CRM solution built on SharePoint 2007 (either Windows SharePoint Services 2007 or Microsoft Office SharePoint Server 2007). BPA CRM is a simple solution to be used in daily business by your customer-facing employees to track their activities such as emails, calls, tasks and

meetings related to accounts, contacts, opportunities or cases. BPA CRM is delivered as a site solution ready to be installed into an existing SharePoint environment. BPA CRM includes an Outlook connector to be able to quickly add Outlook emails or events in the CRM solution. BPA’s CRM SharePoint solution is used by small, medium and large companies worldwide. <http://www.bpa-solutions.net/default.aspx>

**Challenge:** BPA intended to use a single technology to manage its Intranet and CRM solution. Therefore BPA made the strategic decision to implement BPA CRM on top of Microsoft SharePoint Technology. Why SharePoint? Because SharePoint offers a broad variety of features that can be used out-of-the-box for Intranet activities (team collaboration, task management, blogging). It also provides easy extension mechanisms to manage custom data and to display/manipulate/manage it with custom data views – in SharePoint terminology: *custom lists/views* and *WebParts*. BPA started with Windows SharePoint Services (WSS) Version 2 which was available for free on the Windows Server Platform. They recently upgraded to the latest available version of WSS and Microsoft Office SharePoint Server (MOSS).

The big challenge from the beginning was to manage a large number of contacts, tasks, and activities which were stored in the SharePoint repository. It soon turned out that performance was becoming an issue with the increase in data that was managed by BPA CRM. As with any technology it was not easy to determine if the problems were located in BPA’s custom code or within SharePoint components.

**Solution:** BPA chose dynaTrace because it offers out-of-the-box support to analyse and diagnose SharePoint-based applications. dynaTrace proved easy to install and it immediately pinpointed the problematic areas within BPA’s customized SharePoint CRM solution. Boris Lutz, General Director of BPA Solutions, after seeing the first results provided by dynaTrace in their production environment, said: “It’s not marketing B.S. – it really works!”



*“We looked for a solution to gain insight into BPA CRM. We experienced performance problems with large amounts of data. dynaTrace gave us the insight to know where to fix the problem”*

*“dynaTrace not only identified our own performance problems but also highlighted how other components we use contribute to overall performance”*

*“We will use dynaTrace as an educational tool for developers in order for them to learn how to develop high-performing and scalable solutions on top of SharePoint”*

*“It was impressive to see that dynaTrace provided results minutes after it was installed”*

*“It’s not marketing B.S., it really works!”*

**Results:** dynaTrace discovered several different problematic areas – both in SharePoint Components and in custom WebPart implementations. “We looked for a solution to gain insight into BPA CRM,” said Lutz. “We experienced performance problems with large amounts of data. dynaTrace gave us the insight to know where to fix the problem.” With this insight, BPA could adapt their implementation to overcome the problems of certain SharePoint base functionality as well as improving their own code. Overall performance of BPA CRM was improved as well as improving the understanding about the underlying SharePoint technology. With the insight gained into the SharePoint Framework, BPA can more easily implement additional features and extensions into BPA CRM.

**Insight into SharePoint** “dynaTrace not only identified our own performance problems,” said Sr. Development Engineer Cédric Petter, “but also highlighted how other components we use contribute to overall performance.” BPA was able to identify that different queries for the same data have different performance and resource impacts on the server. With this it was possible to change the way certain queries against SharePoint lists/views were executed, thereby increasing the performance of several critical BPA CRM features.

In one case a query that returned detailed account information took 2.5 seconds. After switching to a different query mode, it executed in several milliseconds – improving WebPart performance by nearly 100%. Accessing SharePoint data in general turned out to be one of the performance-critical areas within BPA CRM. With the newly-gained understanding about how the SharePoint *Data Access Layer* works, BPA can design and implement new data-intensive features with performance and scalability in mind.

**Identification of architectural issues** dynaTrace not only identified issues within SharePoint and the use of its Libraries, it also helped to understand the performance implications of BPA’s custom WebParts when used in SharePoint. dynaTrace’s API View immediately revealed that most time was spent within BPA’s Rendering methods.

SharePoint enables developers to implement WebParts in different ways. There are multiple options as to how WebParts render and access data from SharePoint Content Databases. dynaTrace helped BPA to understand that some of their rendering choices significantly degraded performance. With simple changes in presenting data to the End-User, overall performance could be improved. “We will use dynaTrace as an educational tool for developers in order for them to learn how to develop high-performing and scalable solutions on top of SharePoint,” said Petter.

A side effect of this performance improvement was additional improvement in memory usage. With the changed approach fewer short-living objects had to be allocated, resulting in less memory usage and fewer garbage collection runs.

**Thin Clients** As BPA discovered with diagnostics information from dynaTrace, Thin Clients are only “thin” if they follow certain rules. A SharePoint Solution brings with it many interactive Web Application Features in form of client-side JavaScript. The overhead of bringing this code to the Browser and of executing this code was never seen as an issue. With dynaTrace it was possible to identify that a huge percentage of the overall “experienced” end-user performance was not purely a server-side issue. The problem was also identified in the additional amount of data transferred to the client and the additional overhead within the Browser. The Browser had to parse large SharePoint pages (some of them more than 250k of pure HTML) and had to execute lots of client side script code.

With this information BPA is redesigning some of their pages in order to reduce overhead on the network as well as that caused by new layouts in the browser.

**Configuration Issues** “It was impressive to see that dynaTrace provided results minutes after it was installed,” said Lutz. SharePoint is a dynamic platform that can be configured and customized in many different ways. A wrong entry in SharePoint configuration files can lead to severe performance impact as BPA discovered with dynaTrace.

Such an entry in BPA’s main SharePoint web.config file introduced 6 seconds of overhead into a main feature page. With dynaTrace’s exception-log feature, BPA quickly determined there was a configuration issue and isolated the exact location in the web.config file – a minor configuration issue with major impact. With dynaTrace, BEA resolved it in minutes.