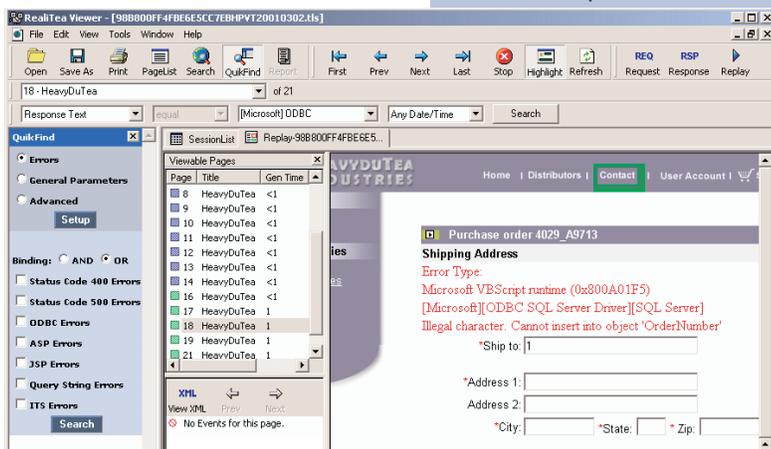# About TeaLeaf Technology

TeaLeaf Technology is a pioneer in the burgeoning field of Web application management. By managing the integrity of Web applications, TeaLeaf® IntegriTea™, the latest generation of the company's groundbreaking software, enables companies to more rapidly isolate and resolve Web site problems, and reduce Web application support costs by 60%.

Company: TeaLeaf Technology

Industry: Network and web analysis

Requirements: Database Control and performance

Using patented technology, TeaLeaf IntegriTea captures the composition of every Web page sent to every user, alerts IT to possible problems, quickly resolves errors, and communicates problem resolution across the enterprise. When a problem occurs, it can be isolated to a single component within a complicated system so that the problem can be immediately resolved. TeaLeaf IntegriTea allows companies to make timely, informed, and directed actions to increase revenue and drive down costs on their business-critical Web sites, resulting in increased reliability and reduced time for problem resolution. Implementation of TeaLeaf IntegriTea typically results in a 60% reduction in Web application problem resolution.

TeaLeaf Technology was founded in 1999 as an independent spin-off of SAP AG. Originating from within SAP Labs, the core technology was initially developed by Robert Wenig and his team as they set out to understand how customers were using the software company's Web-based applications.

Application Overview

In their quest to satisfy online users cost-effectively and reliably, businesses increasingly rely on Web applications for business-critical services. Meanwhile, external Web service providers manage an increasing number of these Web applications. The rapid development of Web-enabled applications has spurred the fantastic growth in the availability, popularity, and reliance upon internal and external business-critical Web applications. Deploying Web applications eliminates many of the issues that have to date plagued developers and IT operations. Issues such as platform dependency, enterprise installation and upgrade issues are significantly reduced, if not outright eliminated. For these applications to succeed, however, they must meet a threshold of performance, availability, and usability that is acceptable to end-users.

FairCom and TeaLeaf

TeaLeaf IntegriTea provides unprecedented visibility into whether or not the Web application is functioning correctly by capturing and monitoring what the real user is doing and seeing across the entire Web application session. This level of data enables IntegriTea to alert against failures that go otherwise undetected, reproduce the problem and what led up to it, as well as correlate the problem back to the user and source.

Providing this level of visibility requires capturing, organizing and analyzing the complete HTTP(S) request and response stream in real-time. Owing to the volume and real-time data processing requirements to

"We reviewed every database option available on the market today. Only FairCom could meet the real-time and throughput requirements we had to deliver in the TeaLeaf Web application management solution."

Tim Knudsen,
Director of Product Management, TeaLeaf Technology

provide this level of functionality, throughput performance and scalability are central issues for the IntegriTea solution.

TeaLeaf looked at a number of commercial database servers to use with the IntegriTea server. After experimenting with one of the leading enterprise-wide database servers, TeaLeaf engineers discovered that it simply couldn't keep up with the necessary data volumes and real-time data processing requirements—in some cases up to 40+ gigabytes per day. At that point, TeaLeaf turned to FairCom and the c-treeSQL Server. By utilizing FairCom's unique ability to offer direct database access through the more efficient ISAM interface at the same time as offering embedded SQL, interactive SQL and direct SQL calls, the c-treeSQL Server was able to offer the performance and data throughput TeaLeaf needs to support today's complex Web sites.

Randal Hoff, FairCom's Director of Business Development, noted, "While the c-tree Server was able to offer better performance than the big 3 relational engines out of the box, the TeaLeaf developers and FairCom's R&D team were able to drill into detail at the architectural level and come up with precise enhancements to offer even better performance. This level of customization is something that FairCom believes is very lacking in the industry and we feel this is an important dimension to the success of a project of this size and magnitude."
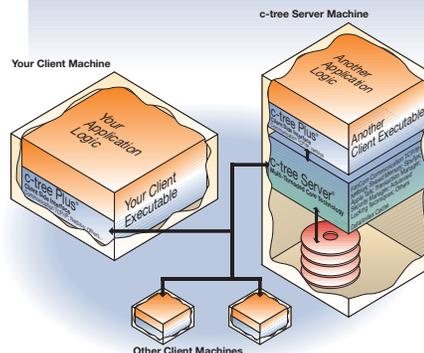
The combination of TeaLeaf 's Web application management solution and the c-treeSQL Server is proving invaluable to TeaLeaf customers every day. The solution has already been deployed to a number of large-scale sites – including a worldwide online retailer of consumer CDs and music videos, a U.S. manufacturer of electronic components, and a major U.S. airline – with significant success.

The Details

When developing TeaLeaf IntegriTea, engineers had the foresight to realize that removing historical data could become a significant issue for companies that track and store massive amounts of data. Accordingly, they implemented FairCom's partitioned files feature. This feature allows an application to easily and automatically store data in different files (partition members) based on an attribute of the data. In the TeaLeaf IntegriTea implementation, the data is partitioned into a different file for each day. Although managing a separate file for each day might seem cumbersome, FairCom's implementation of partitioned files is such that all of the partitions are treated as a single logical file, though they are actually many physical files. When the time comes to archive older historical data, it is a simple one-step process to drop partitions with the old data.

The TeaLeaf team also implemented some of FairCom's specialized caching techniques available with the c-treeSQL Server. Some TeaLeaf customer sites use very large cache sizes – in some cases, as much as 2 gigabytes of cache. To handle a cache of this size, FairCom has a sophisticated caching mechanism with linked lists of buffers so that only those buffers of interest need to be processed. TeaLeaf can also set up special caching options on a file-by-file basis. For example, they can specify that a specific file should never be cached, set up a dedicated cache space for a specific file (with specific cache sizes and/or percentages of overall cache space available), and even prime the cache for a specific file so that a specified number of bytes for the given data file is read into data cache when the file is physically opened. This flexibility gives developers significant control over their application – a hallmark of FairCom database technology.

FairCom Technology

c-tree Server Machine

Your Client Machine

Your Application Logic

c-tree Plus

Your Client Executable

Another Application Logic

c-tree Plus

Another Client Executable

c-tree Server

Other Client Machines

FairCom's robust database servers offer significant throughput enhancements over traditional non-server models by providing reduced network traffic and utilizing the power of true multi-threading. FairCom's advanced client/server implementation supports heterogeneous networks and lets dissimilar clients attach concurrently to any single or combination of c-tree Servers.

Portability is afforded through over 30 supported platforms and 5+ supported communication protocols. Applications can easily be scaled by changing the back-end server to more robust platforms. c-tree Servers are easy to set up and require no system tuning or DBA. In addition, FairCom offers a robust Server SDK, which includes source code to most of the server's key components and allows application developers to build their own application specific database server. Features include: encryption, extensive anti-deadlock detection/resolution, caching/index compression, full OLTP (online transaction processing) with complete roll-forward/ roll-back, automatic recovery, intermittent save points, file mirroring, full administrative API, and more.

For more information about TeaLeaf, visit www.tealeaf.com

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