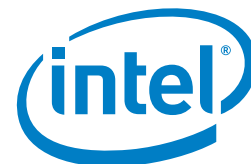


CASE STUDY

Intel® Xeon® Processor E3 Product Family

Big Data Analytics

Cloud Computing Solutions



T-Systems creates cloud-based big data solution with Intel® Xeon® processor-based servers

The Intel® Xeon® processor E3 product family enables T-Systems to bring big data to smaller businesses

Companies now realize that the data passing through their businesses can have strategic value. To help them unlock it, T-Systems launched a new cloud-based big data analysis service, based on the Intel Xeon processor E3 product family.



T - Systems

"We built our big data infrastructure on the Intel® Xeon® processor E3 product family and Intel® Server Boards because our own research showed they have higher energy efficiency and a lower total cost of ownership."

Sven Löffler
Business Development Executive
BI & Big Data
T-Systems

CHALLENGES

- **Enable big data:** T-Systems needed to deploy a cloud-based big data solution for its customers, with minimal operating costs.

SOLUTIONS

- **Intel-based servers:** T-Systems deployed 95 physical servers based on the Intel® Xeon® processor E3 product family, Intel® Server Board S1200BTLR and 1 Gigabit Intel® Ethernet Converged Network Adapters.
- **Big data software:** Hadoop*, running on the CentOS* operating system, was deployed for big data analysis.

TECHNOLOGY RESULTS

- **Energy efficiency:** T-Systems' own tests revealed that a single Intel Xeon processor E3 product family consumes one-third less power than the previous technology, while almost matching its performance.
- **Energy optimized:** T-Systems has optimized its server power consumption to less than 100W at full load.
- **Lower costs:** T-Systems' own tests found that the new processor lowers its total cost of ownership so it can pass savings on to its customers.

BUSINESS VALUE

- **New services:** T-Systems has extended its offering to existing clients through the launch of the cloud-based big data analysis service, which enables customers to cost-effectively analyze complex and large data sets.
- **New customers:** T-Systems can now work with customers that could not previously afford big data analysis services.

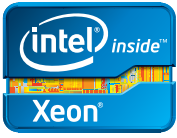
The rise of big data

Across all sorts of industries, companies are starting to realize that data they've long neglected can have strategic value. The discipline of big data is all about taking this information, typically unstructured, and creating meaning from it, so businesses can make better decisions, create efficiencies and, in some cases, invent new services and products.

In the automotive industry, for example, data from network-enabled vehicles can deliver insights into driver behavior and vehicle performance. In procurement, having more real-time data can help to inform better buying decisions in terms of both price and timing. For marketers, a real-time understanding of how a campaign is performing

makes it possible to steer the campaign in the right direction, redirecting advertising resources and refining campaign materials in line with the market segment's response. Media organizations can become intelligent news organizations if they can mine their archived content to find valuable insights.

It is these four use cases that T-Systems wanted to address when it started to offer big data analytics solutions to its customers, adding to the SAP*-based business intelligence solutions it already provides. Headquartered in Frankfurt, T-Systems provides integrated IT services and consultancy to an international client base. It employs over 50,000 staff, and generated over EUR 10 billion of revenue in the 2012 financial year.



T-Systems's own research shows it cut server power consumption by one-third while maintaining constant performance

T-Systems relies on being able to offer innovative, technology-led solutions that successfully address the practical requirements of customers and help support business growth. Its new big data solutions will be delivered as cloud services, opening up big data capabilities to customers who could not previously afford them.

T-Systems chooses Intel

To enable the new cloud-based big data services, T-Systems deployed 95 physical servers based on the Intel Xeon processor E3 product family, Intel Server Board S1200BTLR, and 1 Gigabit Intel Ethernet Converged Network Adapters. Each node has six two-terabyte disks for storage.

These servers run the CentOS operating system and the Cloudera* Hadoop implementation. T-Systems developed its own Linux*-based software for software deployment, patch management, and hardware monitoring. According to T-Systems, the new solution can support a total of 1.2 petabytes of data, with 400 terabytes of usable data at any one point due to how the Hadoop platform manages data.

"We built our big data infrastructure on the Intel Xeon processor E3 product family and Intel Server Boards because our tests showed it had a lower total cost of ownership and higher energy efficiency and we knew it had a strong track record, having been available for some time," said Sven Löffler, business development executive for business intelligence and big data at T-Systems.

Making a big splash with big data

The type of data being analyzed in the new architecture varies depending on the specific use cases required by end customers, and includes both structured and unstructured data. It includes location and performance information sourced from vehicles; social media and other written online content; archived news articles, video and audio reports; and supplier, product, and market segment data.

Customers are delighted with the offering," said Löffler. "They particularly appreciate the low ramp-up time and the high cloud availability and security standards, which ensure their data is available for them when they need it and protected from unauthorized access. We are targeting both new and existing customers with this new service and are excited by the opportunity we have to bring big data analytics to customers who could not previously afford it."

T-Systems carried out its own research, using the LinX* benchmark to compare the single-socket Intel Xeon processor E3 product family (based on 22nm architecture) with two of the previous processors T-Systems had been using, the Intel Xeon processor 5000 series (based on 32nm architecture). "We found we could achieve nearly the same performance with just one of the new processors, compared to two of the older processors, and yet still cut power consumption by one-third at maximum load. Our further Hadoop benchmarks correlated with these results. We've been able to optimize the power consumption of the setup to less than 100W at full load with 12 terabytes of hard disk space," said Löffler.

Lessons learned

By using servers based on the Intel Xeon processor E3 product family, T-Systems was able to use a single processor in place of two and cut energy consumption by one-third while maintaining near-constant performance levels. The new servers have enabled T-Systems to cost-effectively implement big data solutions so it can expand its business with new services to existing clients and reach new clients who could not previously afford big data analysis.

He adds: "The new platform enables us to deliver insights much faster and with greater potential to scale up to serve a larger customer base. It enables us not only to develop new analytics services, but also to implement them with a low total cost of ownership, so we can offer them to customers at a lower price point and expand our potential customer base. We don't foresee any limits on how many customers we can simultaneously serve from our new big data infrastructure."

Find the solution that's right for your organization. Contact your Intel representative, visit Intel's Business Success Stories for IT Managers (www.intel.co.uk/Itcasestudies) or explore the Intel.co.uk IT Center (www.intel.co.uk/itcenter).



Copyright © 2013 Intel Corporation. All rights reserved. Intel, the Intel logo, Intel Xeon, and Xeon inside are trademarks of Intel Corporation in the U.S. and other countries.

This document and the information given are for the convenience of Intel's customer base and are provided "AS IS" WITH NO WARRANTIES WHATSOEVER, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHTS. Receipt or possession of this document does not grant any license to any of the intellectual property described, displayed, or contained herein. Intel® products are not intended for use in medical, lifesaving, life-sustaining, critical control, or safety systems, or in nuclear facility applications.

Software and workloads used in performance tests may have been optimized for performance only on Intel microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations, and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more information go to <http://www.intel.com/performance>

Intel does not control or audit the design or implementation of third party benchmark data or Web sites referenced in this document. Intel encourages all of its customers to visit the referenced Web sites or others where similar performance benchmark data are reported and confirm whether the referenced benchmark data are accurate and reflect performance of systems available for purchase.

*Other names and brands may be claimed as the property of others.

0813/JNW/RLC/XX/PDF

329410-001EN