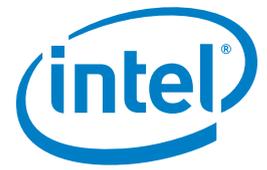


SOLUTION BRIEF

Intel® Xeon® Processor E5 Family

Communications/Media
Security in the Cloud



A secure, high-performing platform for delivering cloud infrastructure services

Invitel ensures the resilience, manageability and performance of its InviCloud* service with servers powered by the Intel® Xeon® processor E5 family



“Basing our cloud offering on the processing performance of the Intel Xeon processor E5 family has enabled us to deliver the dependable service our business customers require, with data security protection in place to ensure compliance with Hungary’s laws and regulations. The technology allows us to plan for the future expansion of the service, knowing that our platform offers the scalability and reliability to achieve this.”

Gyongyver Gerlei,
Interim CSO, Corporate Business,
Invitel

CHALLENGES

- **Establish offering:** Develop new cloud infrastructure service to offer enterprise clients a simple and high-performance way of enhancing their IT hardware and software resources
- **Distributed performance:** Ensure the technology underpinning the service can handle the simultaneous demands of thousands of clients
- **Maintain security:** Guarantee the security and independence of customers’ data in a multi-tenanted IT environment

SOLUTIONS

- **Technology platform:** Invitel has based its InviCloud service on servers from Dell, powered by the Intel Xeon processor E5 family, running a virtualized computing environment based on software from VMware and Microsoft Windows* Server 2012
- **Deep security:** Intel® Trusted Execution Technology (Intel® TXT)¹ ensures the integrity of the virtualized operating environment by protecting against intrusion attempts on BIOS, firmware and other pre-launch software components
- **Data protection:** Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)² technology built into the processors supports powerful encryption of data at rest, in applications and when being transmitted, without impacting on performance

TECHNOLOGY RESULTS

- **Robust platform:** The use of the Intel Xeon processors E5 family in the infrastructure underpinning InviCloud allows Invitel to offer a wide range of performance and software offerings, knowing that it has the processing resources to accommodate this
- **Secure foundation:** Intel TXT is turned on by default in Invitel’s virtualized cloud environment, ensuring the security of customer profiles and providing full control over how sensitive data is handled
- **Fast encryption:** Intel AES-NI provides Invitel with a powerful and cost-effective way to safeguard data on its systems from unauthorized access, capable of handling cloud-scale data volumes

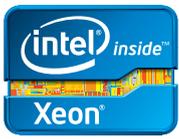
BUSINESS VALUE

- **First mover:** Invitel is the first telecom provider in the country to offer a fully-automated cloud infrastructure solution to business customers
- **Compliant computing:** The use of Intel TXT and AES-NI for fast data encryption helps ensure InviCloud meets data protection laws and regulations in Hungary, providing business customers with peace of mind that their information is secure
- **Growth potential:** The high performance of the infrastructure ensures that it remains responsive for a growing customer base, and offers the potential to support Invitel as it considers expanding the service outside Hungary

Innovation in ICT

Invitel is a leading information and communications technology (ICT) provider in Hungary, serving residential users as well as business customers. For consumers, its offering encompasses digital TV, Internet and mobile and fixed voice services, and it provides a unique range of media, telecom and IT products to a corporate customer base that is over 20,000-strong.

As an organization, Invitel places a strong emphasis on the continuous development of its offering. It aims to harness innovation to deliver reliable, practical and quality services that provide long-term solutions to customers’ requirements and lay the foundation for a strong, profitable business.



Invitel offers advanced data security protection within a heterogeneous cloud environment without compromising on performance, using the Intel Xeon processor E5 family

Moving into the cloud

In Hungary, the cloud computing sector is growing quickly, with a small but active collection of companies developing hosted services for end-user customers. Invitel recognized the strategic importance of extending its offering into the cloud space. It aimed to offer new and forward-looking services that stand out from the competition and genuinely serve the practical needs of its customers.

After a detailed evaluation of current cloud offerings and the needs of Hungarian enterprises, Invitel established that customers are most interested in services that offer flexible performance and that can be dynamically adjusted according to their specific requirements at that time. In particular, they wanted the ability to adjust processing, memory, storage and bandwidth performance according to business needs.

Additionally, enterprise users wanted the option of using a cloud service to run a range of software environments and applications, including Microsoft Windows Server, Exchange*, SharePoint*, Visual Studio*, Forefront*, Expression* and the Office* suite. Others preferred to use cloud infrastructure to run applications in a Linux environment, such as the Debian* or Ubuntu* operating systems.

Identifying the right solution

With these requirements identified, Invitel began putting the hardware and software infrastructure in place to support its new offering, which it named InviCloud. The need for a high-performance platform that could dynamically respond to fluctuations in demand and data throughput led it to consider the Intel Xeon processor E5 family. This offers the processing power and scalability Invitel required as it sought to develop its cloud offering. To complement the processing flexibility offered by Intel's hardware, Invitel aimed to establish a virtualized server environment.

Another priority for Invitel was ensuring the security and manageability of its infrastructure. To effectively support the security requirements of enterprise customers, as well as Hungarian

data protection requirements, it needed to demonstrate that any data held on its systems was strongly protected from intrusion attempts, and that user accounts on the service would be operationally independent from others.

Invitel identified two features built into the Intel Xeon processor E5 family that could support these requirements.

With user profiles being run in a virtualized environment, Invitel needed to make sure that pre-launch and sub-hypervisor software components, such as BIOS and firmware, were protected against tampering or intrusion attempts. Intel TXT supports this by establishing a root of trust. At power-up it verifies that the hardware and software are in a known good state before it allows the virtualized environment to launch.

Further support for data security is provided by Intel AES-NI, an instruction set that helps accelerate hardware support for the encryption and decryption of data. This makes the Intel Xeon processor E5 family an effective and affordable solution for cloud deployments, in which high volumes of sensitive data must be quickly and securely processed without limiting overall performance.

Putting the infrastructure in place

Invitel decided to deploy Intel Xeon processors E5 family in Dell PowerEdge* M620 servers running VMware vCloud Director* 5.1 to facilitate a Windows Server 2012 environment. Besides providing the robust and flexible infrastructure needed to run customers' primary profiles on the InviCloud service, Invitel has also designed its platform to be fully redundant, ensuring high availability. Invitel can also provide back-up and restore capabilities as an additional service to customers.

The flexible performance of Invitel's hardware and its virtualization platform has allowed it to create a service that can handle most user requests on an automated basis. Besides enhancing the user experience, this also reduces the burden on IT support staff at Invitel.

The processing performance of the Intel Xeon processor E5 family ensures InviCloud can dynamically respond to customer needs –

Lessons learned

When establishing its cloud computing service, Invitel recognized the need to offer customers a secure environment for their data, as well as high processing capacity and ease-of-use. Basing InviCloud on the Intel Xeon processor E5 family has provided Invitel with powerful security tools to safeguard the information on its systems, without compromising the overall performance of its service, or its potential for future growth.

whether they require adding compute power or subscribing to an additional software component – while maintaining the overall quality of the service for all users.

The security features built into the Intel Xeon processor E5 family have helped reduce the obstacles to business adoption of InviCloud. Enterprise customers can be confident that the information they upload to the service is handled in compliance with Hungarian data protection laws and regulations and is protected against unauthorized access. Even in a heterogeneous virtualized environment, Intel TXT ensures the overall integrity of the InviCloud infrastructure, regardless of the operating environment customers wish to run on the service.

Future ambitions

The powerful performance of Invitel's cloud infrastructure has ensured the success of InviCloud following its launch. With the Intel Xeon processor E5 family, it can rely on a stable, flexible and scalable platform that will continue to support its offering as it looks to expand its user base. The growing adoption of cloud computing services across Europe and globally has led Invitel to consider the potential to expand InviCloud outside Hungary, secure in the knowledge that it has the secure, high-performing infrastructure to succeed.

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¹ No computer system can provide absolute security under all conditions. Intel® Trusted Execution Technology (Intel® TXT) requires a computer with Intel® Virtualization Technology, an Intel TXT-enabled processor, chipset, BIOS, Authenticated Code Modules and an Intel TXT-compatible measured launched environment (MLE). Intel TXT also requires the system to contain a TPM v1.s. For more information, visit <http://www.intel.com/technology/security>.

² Intel® AES-NI requires a computer system with an AES-NI enabled processor, as well as non-Intel software to execute the instructions in the correct sequence. AES-NI is available on select Intel® processors. For availability, consult your reseller or system manufacturer.

For more information, see <http://software.intel.com/en-us/articles/intel-advanced-encryption-standard-instructions-aes-ni/>

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