Technical Guide

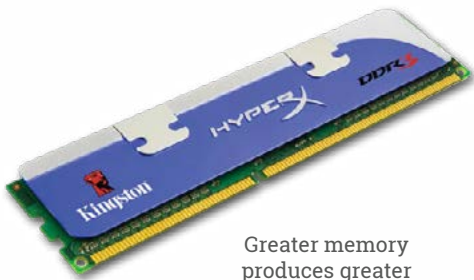**Intella® delivers dramatic performance improvements.**

Faster indexing and searching increases user efficiency resulting in a higher return on investment!

Multi-disk optimization speeds up indexing and searching.

Multi-core processors deliver dramatic performance improvements!

Greater memory produces greater performance.

Forensic and eDiscovery market trends include increased case sizes, more complex searching, and a desire for more robust reporting options. Intella® continues to deliver on Vound's commitment to provide ever-increasing performance and functionality while maintaining its unique visual presentation and intuitive interface. Vound's development of Intella's® cutting edge architecture has resulted in dramatic performance improvements for case sizes into the terabytes.

Vound has developed Intella® to process significantly larger data sets while improving (not just maintaining) indexing and search speeds. Design criteria included these critical forensic application prerequisites on large data sets:

- Indexing and creation of a searchable database of text, images, and metadata from a range of source types

- Use of complex query strings

- Ability to categorize data into easy-to-navigate and search facets (e.g. type, location, address, etc.)

- Export large sets of results in a variety of formats

- Smart functionality such as technology assisted review (TAR)

As a result of our development effort, Intella® delivers on these technical attributes:

- Intella® includes in-built databases so there is no need to purchase additional databases such as SQL or Oracle.

- Our architecture effectively utilizes multi-core processors for indexing and searching

- Intella® takes advantage of *multi-disk optimization* for multi-disk, SSD, and RAID based computers using specifically developed coding to deliver outstanding performance improvements.

Vound has consistently designed Intella® to perform well on a "standard off-the-shelf" computer platform not requiring expensive computer hardware and software. However, in order to take full advantage of the new Intella® architecture when processing significantly larger data sets, careful selection and configuration of the computer is recommended.

Below are Vound's recommendations and observations. The objective is to help you tailor your computer environment so you can better realize the benefits of Intella® for your cases.

General considerations

Intella's® indexing performance depends on various aspects:

• **Data complexity** – PDF and MS Office files require considerably more time to index than plain text files. Additionally, large PST/OST/NSF files that have been used intensively over a number of months or years take more time to process than "younger" files because of fragmentation of the internal data structure. Note – Intella® benchmarks its indexing speeds using PST/OST files with all indexing options on. Intella® typically does not benchmark Mbox or text files as we believe these files are not of an adequate data complexity for meaningful results.

• **Hardware** – Faster hardware, naturally, means faster processing. To realize maximum benefit from multi-disk optimization pay special attention to the configuration of the hard drive(s). (See "HARD DRIVES" below).

• **Background processes** – Some background processes can seriously affect Intella's® performance. Virus scanners that check every evidence file to be indexed will dramatically slow processing and can even prevent certain evidence files from being seen by Intella®.

Hardware recommendations

There are different minimum hardware and software requirements for each of our products. Please see this document for more information about the hardware and software specifications for the product which you are using.

https://community.vound-software.com/topic/269-selecting-a-computer-to-host-your-vound-software/

Here are two configuration examples for cost-effective and high performance systems. These examples assume you are running Intella Professional.

Example configuration for a cost-effective high performance desktop machine	Example configuration for a very high performance desktop machine
• Intel® multi core i5 or i7 CPU • Main board with three or more SATA-600 connectors • One SATA drive dedicated for the OS • Two SATA drives with high host to/from drive data transfer rate (100 – 200MB/s). SSD drives would provide better performance. • 32GB dual channel DDR4 or DDR5 RAM	• Intel® multiple i7 CPUs and cores • Fast SSD, RAID or NVMe storage for the case, source and optimization drives • Intel® Smart Response SSD/disk combination for larger cases • Separate drive for operating system • 128-256 GB dual channel DDR4 or DDR5 RAM

Following are Vound's recommendations and comments regarding specific components in the computer configuration. These points reflect our findings during development and benchmarking.

Hard drives

Because Intella® is an intensive user of the system's hard drive, we recommend careful selection and configuration of the hard drives in order to optimize performance. As a general rule, newer hard drives will outperform older drives in that they benefit from design improvements and new technology. Consider the following when using Intella®:

• **Separate disks for evidence and case indexes.** During indexing, Intella® accesses the database continually performing read and write functions. In order to more efficiently use the resources, it is recommended that the evidence data, the case data and the optimization drive be allocated to separate physical hard drives. For example, put the case data on the "D" Drive, the evidence data on the "E" Drive and set the optimization drive as the "F" drive. Ideally you will have the operating system on its own physical drive, e.g. the "C" Drive.

• **Proper connection.** To realize maximum benefit from Intella's® multi-disk optimization architecture, ensure that the hard drives are appropriately connected to the computer's motherboard so as to benefit from the higher available bandwidth. For example, connect the drives to the SATA-600 connector rather than the smaller bandwidth carrying SATA-150.

• **Configure the system's bios correctly.** Typically the computer's BIOS defaults to the lowest common denominator to facilitate compatibility for connected hardware components. As a result, performance and speed can suffer. To address this set the BIOS to:

  – Ensure the hard drive supports Native Command Queuing (It should)

– Confirm that the SATA control mode is set to either AHCI or RAID. Note: if the setting is at IDE (typically the default), Intella's® performance will suffer with slower indexing and searching.

• **Use of external and/or network drives. Internal drives are always the preferred option for Intella®.** Intella's® indexing performance can deteriorate significantly when used with external or network drives. Although Intella® will technically work with USB and network drives, it is possible that connection dropouts can occur. Therefore we do not recommend or support using USB or network drives when indexing cases. The drives for the Case data, Evidence data, and Optimization should be internally connect drives when processing evidence.

Once the evidence has been indexed into a case, the case and evidence data can be moved to another location for the review phase. This can be a fast and reliable network storage location. When using network drives/locations, it is imperative that no other users access the files at the same time. You should also ensure that no network antivirus or filtering software blocks access to the evidence or case data stored on the network.

CPU

Intella® has been designed for optimal performance on multi-core processors. The minimum recommended cores for your system range from 4-16 cores depending on which product you are running. You should scope your hardware to suit at least the minimum number of cores for your product. Factoring in future scalability now can also save you time and money further down the road.

IMPORTANT NOTE REGARDING CPUS AND HARD DRIVES: Vound's testing and benchmarking concludes that multiple hard drive configurations deliver better performance than expensive multi-core processor configurations.

Memory

Intella® requires a minimum amount of RAM for processing. This depends on the product, but range is from 16GB-64GB. Naturally, faster RAM modules are also advised. Ensure that the installed RAM modules match the processor's dual/triple channel memory architecture, e.g. two equal RAM modules for dual-channel and three equal modules for triple-channel.

If you invest in more than the minimum RAM and CPU cores for your product, you can manually set these setting in you case for better performance.

Training

Vound offers excellent training options, including a half-day online training course. Training can significantly improve your usage of the Intella® range of products.

PHONE ENQUIRIES
+1 (888) 291-7201

AMERICA america@vound-software.com
ASIA asia@vound-software.com
EUROPE europe@vound-software.com

www.vound-software.com

Vound
AMERICA • ASIA • EUROPE