# Intella

**Process | Search | Filter | Produce. Simple.**

## Intella® delivers dramatic performance improvements. Faster indexing and searching increases user efficiency resulting in a higher return on investment!

**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
- 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 searching of technology assisted review functionality

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

- Intella® combines pure Java as well as non-Java dependencies and works efficiently in both 32 and 64 bit environments.
- 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.
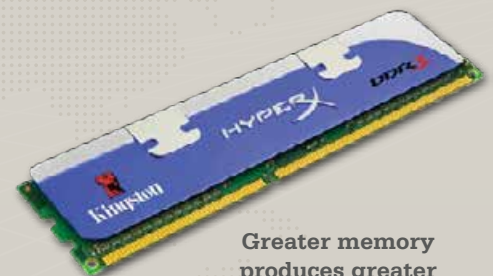
Below are Vound's recommendations and observations. The objective is to help you tailor your computer environment so you can better realize the benefits of Intella® for your cases.

**Multi-disk optimization speeds up indexing and searching.**

**Multi-core processors deliver dramatic performance improvements!**

**Greater memory produces greater performance.**

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# 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

This table offers our hardware recommendations to enable optimal performance with Intella®:

| Technology | Recommended | Ideal | Optimal |
| --- | --- | --- | --- |
| **Storage** | 7200 rpm disk drives or greater | Western Digital® Caviar Black drives (or similar) – 2 each | SSD's or (RAIDed) enterprise-grade SASS hard drives |
| **Processor** | Quad-core or greater | Quad-core or greater | Multiple CPUs and cores |
| **Memory** | 8GB RAM or more | 16GB RAM or more | 32GB RAM or more |

These two configurations are offered as representative options:

| 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<br>• Main board with two or more SATA-600 connectors<br>• One SATA drive dedicated for the OS<br>• Two SATA drives with high host to/from drive data transfer rate (100 – 200MB/s)<br>• 8GB dual channel DDR3 or DDR4 RAM | • Intel® multiple i7 CPUs and cores<br>• SSD or RAID storage for both the case and source drives<br>• Intel® Smart Response SSD/disk combination for larger cases<br>• Separate drive for operating system<br>• 64GB dual channel DDR3 or DDR4 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 and the case data be allocated to separate hard drives. For example, put the case data on the "D" Drive and the evidence data on the "E" Drive. Ideally you will have the operating system on the "C" Drive.

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- **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-300 or 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 possibility, check 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 and search performance can deteriorate significantly when used with external or network drives. If required, external drives such as a USB can be used to hold the evidence data, however it is recommended that the fastest available connection option be used. USB 3.0 or eSATA should offer acceptable performance. Avoid USB 2.0 drives as they are significantly slower for any evidence or case file greater than 2-5 GB.

  Network drives may be acceptable for holding evidence files if on a fast network. When using network drives, 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 the indexing processes.

## CPU

Although Intella® will work with USB and network drives, it is possible that connection dropouts can occur. Therefore we recommend using internally connected drives particularly for the indexing process. Intella® has been designed for optimal performance on multi-core processors. An ideal configuration would contain a CPU with two to four cores, each with the highest performance possible. Good examples are Intel® multi core i5 or i7 processors. They can accommodate complex applications including security algorithms and support more network ports than previous processors.

*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 of 8GB of RAM for processing (4GB for Intella® Viewer). Naturally, faster RAM modules are also advised. Naturally, faster RAM modules are also advised. Ensure that the installed RAM modules match the processor's dual/triple channel memory architecture, ie two equal RAM modules for dual-channel and three equal modules for triple-channel.

## 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.**

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