



Intella Memory Management

Memory Settings Used by Intella

How does Intella use memory?

- 1. Case Manager memory**
 - Used for importing and exporting cases
- 2. Intella main process memory** (known as memory allocation)
 - Controls everything you can see in Intella, except for indexing and exporting
 - This is set using the slider in the Case Editor window
- 3. Number of crawlers**
 - Controls the number of threads which can be used for indexing
- 4. Crawler memory** (known as service process memory/ allocation)
 - Used for indexing, exporting and other processing tasks

Intella will automatically assign the memory to these settings by default.

Manually Configuring the Memory Settings

Why would you need to manually configure Intella's memory settings if Intella automatically assigns these settings?

- Intella reports processing errors in the log files.** Typically, this means the crawler has run out of memory when processing an item. These errors are usually in the indexing stage, before the start of the 'post-processing' phase. The errors below are shown in the logs or on the screen. You should increase the Service process memory in this case.

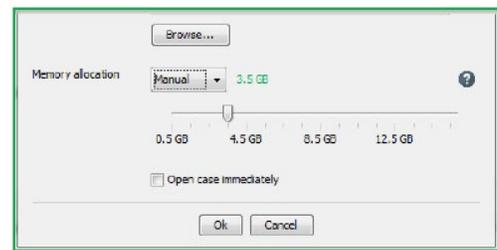
OutOfMemoryError or **java heap space**

- You are processing MS Exchange data.** We recommend increasing the memory settings when processing MS Exchange data. Increase the Service process memory in this case.
- You are getting memory errors in Intella or the logs when not indexing.** This includes when Intella is in the 'post-processing' phase directly after data ingestion/indexing. E.g. errors in the logs or on the screen that show **java.lang.OutOfMemoryError**. Increase the Main process memory in this case.
- You have issues importing or exporting a case in the Case Manager.** Increase the Case manager memory in this case.
- You have invested in high-end hardware.** Increase the number of crawlers, increase the Service process memory, and increase the Main process memory in this case.

Memory Settings Before Version 2.3

The memory settings in Intella changed in version 2.3. Before this version, this is how the settings were:

- The memory settings were 'tied' to the Intella installation. E.g. these settings had to be set every time a new version of Intella is installed.



- The memory settings for the main process were adjusted in the Edit Case window by using the slider.
- The memory settings for the crawlers (e.g. the Service process memory) were located in the Intella.l4j.ini file. Also, the crawler count was located in this file. These settings had to be changed manually by editing this file.

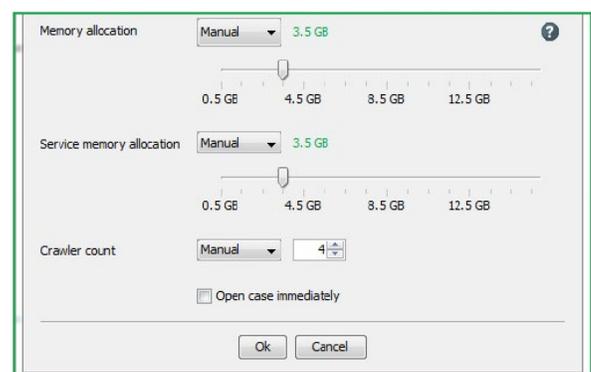
```
# [service process memory]
# Maximum amount of memory, available for every Intella service process.
# Please note that the best value for Intella service processes will be determined
# by Intella itself based on per case memory settings configurable in Intella case manager.
# It is advised to not set this flag unless there is a good reason to do it.
# Minimum of 600MB memory is recommended.
# -Dintella.serviceprocessheap=800M

# [maximum crawler services]
# Number of crawler services that extract text and metadata from
# files. Setting this parameter will override auto determined number
# of crawlers based on the number of available processors/cores and the
# amount of RAM in the computer.
# -Dintella.crawlerscount=4
```

Memory Settings from Version 2.3 on

These are the memory settings beginning with version 2.3:

- The memory settings are now global. They are no longer 'tied' to each Intella installation.



- The memory settings for the main process and crawlers are adjusted in the Edit Case window by using the sliders. Also, the crawler count can be configured in the Edit Case window.
- The memory settings for the Case Manager remain in the Intella.l4j.ini file. Note that this setting rarely needs to be adjusted.

```
# [Intella Case Manager process memory]
##
## Maximum amount of memory, available for Intella case Manager process.
## Minimum 256MB is recommended.
-Xmx256M
```

Example of Configuring the Memory Settings

In this scenario, we have a system with a 12-core processor and 128GB of RAM. You plan to index a 500GB E01 disk image which contains a lot of heavy, text documents.

The following memory configuration would provide good performance for this type of system, and the size/type of evidence being indexed:

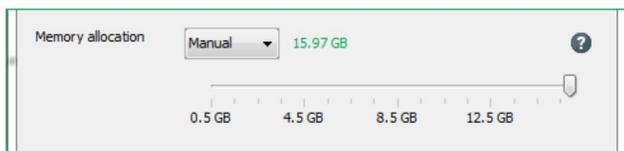
- Manually set the main process memory to 30GB (this would be automatically set by Intella to 15GB).
- Manually set the number of crawlers to 6 (this would be automatically set by Intella to 4).
- Manually set the crawler memory to 3GB (this would be automatically set by Intella to 2).

With these settings, the total memory usage by Intella will be 30GB + 6x3GB (for the crawlers) = 48GB. The system has a total of 128GB of memory, so we still have plenty of free memory for the operating system and other programs on the system. This is important as having free memory (or system cache) can also help with indexing performance.

If OutOfMemory errors occur when processing, the crawler memory can be safely increased by another 2-3GB.

Common Mistakes When Configuring Memory in Intella

The first common mistake that some users make when configuring Intella's memory setting is that they automatically assign too much memory to the setting. E.g. In pre 2.3 versions, many users manually set the memory allocation to the maximum.

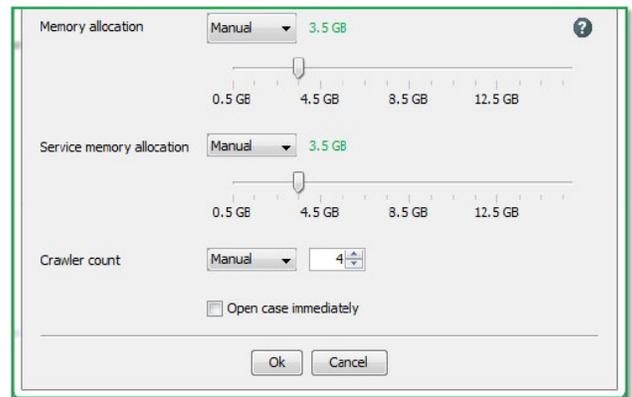


In most cases, this is far too much memory to be assigned to this setting.

In version 2.3, we have seen users manually set the memory and crawler allocations beyond the hardware of the system.

E.g. The settings below would likely provide poor performance for a system with only 32GB of installed memory.

These settings would at least require 112Gb of memory installed in the system. Note that we will add checks for the hardware in a future version. This will stop users over assigning the resources.



Another issue is that some users don't know which memory options are available. The slider in pre 2.3 versions is one memory setting. There is a misconception that setting this higher will increase processing performance.

Indexing performance is determined by a number of factors. Two of which are related to the number of crawlers used during indexing, and the amount of memory assigned to each of those crawlers. Up until version 2.3, these settings were only editable in the Intella.l4j.ini file. Some users are not aware of these settings.



For pre 2.3 versions, it is common that the user will set up the memory and crawler settings for a case, but they don't realise that when a new version of Intella is installed, these settings are set back to default. This is because a new Intella.l4j.ini file is created when Intella is installed. This issue was mitigated with the new memory management features introduced in version 2.3.

You can easily check the amount RAM and how many CPU cores the system has by looking in the case-main.log file. This file also tells you the following:

- The Max heap size (e.g. The main process or memory allocation memory)
- The Service max heap size (e.g. The crawler or service process memory/allocation)
- The number of crawlers which have been set.

```
[INFO ] 2019-10-29 15:55:27,896 [main] * Detected CPU cores: 12
[INFO ] 2019-10-29 15:55:27,896 [main] * Detected RAM: 31 GB
[INFO ] 2019-10-29 15:55:27,896 [main] *
[INFO ] 2019-10-29 15:55:27,896 [main] * Max heap size: 7250 MB (MANUAL)
[INFO ] 2019-10-29 15:55:27,903 [main] * Services max heap size: 4139 MB (MANUAL)
[INFO ] 2019-10-29 15:55:27,903 [main] * Crawlers count: 4 (MANUAL)
```



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