



## **Elasticsearch Setup Guide**

**Release 03**

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  - offer the best product quality and support
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David Ross  
CEO, Ross Video  
[dross@rossvideo.com](mailto:dross@rossvideo.com)

## Ross Video Code of Ethics

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3. We will not ship crap.
4. We will be great to work with.
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6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
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# Inception/Streamline · Elasticsearch Setup Guide

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Patent numbers 4,205,346; 5,115,314; 5,280,346; 5,561,404; 7,034,886; 7,508,455; 7,602,446; 7,834,886; 7,914,332; 8307284, 2039277; 1237518; 1127289 and other patents pending.

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Ross Video Limited (Ross) warrants its Inception and Streamline Server systems to be free from defects under normal use and service a time period of 15 months from the date of shipment:

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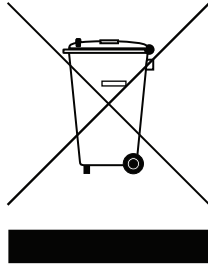
For customers that require a longer warranty period, Ross offers an extended warranty plan to extend the standard warranty period by one year increments. For more information about an extended warranty for your Inception or Streamline Server system, contact your regional sales manager.

## Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

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The crossed-out wheeled bin symbol invites you to use these systems.



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The Hazardous substances tables are available on our website at:

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有害物质表在我们的网站：

<http://www.rossvideo.com/about-ross/company-profile/green-practices/china-rohs.html>

## Company Address

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# Introduction

## A Word of Thanks

Thank you for choosing Ross Video Inception as your newsroom and social media management solution, or Ross Video Streamline as your media asset management solution.

We are committed to providing you with the highest level of customer satisfaction possible. If, for any reason, you have questions or comments, please call Ross Video at +1-613-652-4886 or send us an e-mail at [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com).

We hope that you visit our website [www.rossvideo.com](http://www.rossvideo.com) to stay up to date with ongoing software releases, join our customer forum and learn more about the complete range of Ross Video products.

Note that software maintenance and extended warranties are available for your system to protect and extend the life of your investment. Our sales team are more than happy to provide further information on the plans available. Members of our sales team promptly respond to e-mails sent to: [solutions@rossvideo.com](mailto:solutions@rossvideo.com).

Again, thank you for your purchase of an Inception or Streamline Server system from Ross Video. We are confident of your future pleasure with your choice.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Peter Abecassis', with a long horizontal flourish extending to the right.

Peter Abecassis  
Director of Product Management - Production Workflow  
[peter.abecassis@rossvideo.com](mailto:peter.abecassis@rossvideo.com)

## About This Guide

This guide contains the following chapters that cover the installation and configuration of Elasticsearch software on an Inception or Streamline Server:

- Chapter 1, “**Introduction**” summarizes the guide and provides important terms, conventions, and features.
- Chapter 2, “**Elasticsearch Setup**” provides instructions for setting up Elasticsearch to work with Inception or Streamline.

If you have questions pertaining to the operation of the Ross Video product, please contact us at the numbers listed in the section “**Contacting Technical Support**” on page 1–3. Our technical staff is always available for consultation, training, or service.

## Documentation Conventions

This guide uses special text formats to identify parts of the user interface, text that a user must enter, or a sequence of menus and submenus that a user must follow to reach a particular command.

### Interface Elements

Bold text identifies a user interface element such as a dialog box, a menu item, or a button. For example:

In the **Media Manager Client**, click **Channel 1** the **Channels** section.

### User Entered Text

Courier text identifies text that a user must enter. For example:

In the **File Name** box, enter `Channel01.property`.

### Referenced Guides

Italic text identifies the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the section “**Create Broadcast Stories**” on page 5–2 in the *Inception User Guide*.

### Menu Sequences



Menu arrows identify a sequence of menu items that a user must follow to reach a particular command. For example: if a procedure step contains “**Server > Save As**,” a user should click the **Server** menu and then click **Save As**.

### Important Instructions

Star icons identify important instructions or features. For example:

- ★ After installing Inception Server software, you must obtain Inception feature licenses from Ross Video Technical Support before users can access Inception features.

## Getting Help

To access the Inception or Streamline Server Online Help system, click the  **Help** icon in the main toolbar. For help about the currently open panel, click the  **Help** button in a panel title bar to view a help topic about the panel.

The Online Help system contains the following navigation tabs to locate and access Online Help topics:

- **Contents** — table of contents
- **Search** — full text search
- **Favorites** — preferred information storage and access

Ross Video product guides are also supplied as print-ready PDF files in the **Printing and Guides Download** section of the Online Help system.

The Inception and Streamline Online Help systems contain information about how to configure and use the application. There are two separate Online Help systems; one for the Configuration interface, and one for the User interface.

## Contacting Technical Support

Technical Support is staffed by a team of experienced specialists ready to assist you with any question or technical issue.

Ross Video has technical support specialists strategically located around the globe to ensure a prompt response to technical inquiries. Our primary technical support center is located in Ottawa, Ontario, Canada. In addition, we have offices in The United Kingdom (London), Australia (Sydney), and Singapore with satellite locations in New York City, The Netherlands, and China. As we expand our presence globally, we are constantly evaluating other key locations to have a local technical support specialist in order to better service our customers.

### North America

Our North America center located in Ottawa, Ontario, Canada and is open Monday to Friday 8:30 a.m. to 6:00 p.m. EST, with 24/7/365 on-call service after hours.

Our telephone number is: +1-613-686-1557

Toll free within North America: +1 833-859-0499

### EMEA

Our EMEA center is open Monday to Friday 8:30 a.m. to 5:00 p.m. GMT. After hours support is provided by our North America location.

International toll free: +800 3540 3545

If the local support specialist is not available, your call will be transferred automatically to our North America center.

### Australia

Our Sydney, Australia office is located in Alexandria, NSW.

Our local support telephone number is: 1300 007 677

If the local support specialist is not available, your call will be transferred automatically to our North America center.

## Online

**E-mail:** [techsupport@rossvideo.com](mailto:techsupport@rossvideo.com)

**Website:** use the link <https://support.rossvideo.com/> to open a support request.

# Elasticsearch Setup

This chapter provides instructions for setting up Elasticsearch to work with Inception or Streamline.

This chapter discusses the following topics:

- Java
- Elasticsearch
- Select Elasticsearch as the Search Index
- Load Balance Elasticsearch
- Search Index Settings

## Java

Inception and Streamline package their own version of the Java JRE as a part of its installation. Elasticsearch requires a working JRE on the system, currently Java 8. It is a good idea to install the JDK, which includes the JRE and useful trouble shooting tools.

### To install the Java JDK

1. Use the following URL to log in to the **Ross Video Transfer** site:  
`https://transfer.rossvideo.com/`
2. On the **Ross Video Transfer** site, open the **Inception/Utilities/JDK/17.2.1+** folder.
3. Download the **zulu8.80.0.17-ca-jdk8.0.422-win\_x64.msi** installer.
4. Double-click the **zulu8.80.0.17-ca-jdk8.0.422-win\_x64.msi** installer to install the JDK.
5. Complete the following steps to set the **JAVA\_HOME** environment variable:
  - a. Open the **System** control panel.
  - b. In the **System** control panel, select **Advanced System Settings** to open the **System Properties** dialog box.
  - c. In the **System Properties** dialog box, click **Environment Variables** to open the **Environment Variables** dialog box.
  - d. Use the **Environment Variables** dialog box to create a **System** variable that sets the **JAVA\_HOME** environment variable to the exact JDK installation folder. Typically, the installation folder is `C:\Program Files\Zulu\zulu-8`.
6. Install the Java JDK on each Inception or Streamline Server computer in your system (repeat steps 1 to 5).

## Elasticsearch

Inception and Streamline work with version 5.2.2 of Elasticsearch.

### To install Elasticsearch

1. Extract the supplied zip file to `C:\Program Files\Elasticsearch`.
2. Open ports **TCP 9200** and **TCP 9300** between the servers to enable inter cluster communication.  
Inception and Streamline use port TCP 9200 to connect to Elasticsearch.
3. Install Elasticsearch on each Inception or Streamline Server computer in your system (repeat steps 1 and 2).

## Java Native Access Library Version Update

Before you start Elasticsearch, you must upgrade the Java Native Access (JNA) library that ships with Elasticsearch to JNA 4.3.0.

### Complete the following steps to update the JNA library to version 4.3.0:

1. Use the following URL to open the **Java Native Access » 4.3.0** web page of the **MVN Repository**:  
`https://mvnrepository.com/artifact/net.java.dev.jna/jna/4.3.0`
2. In the **Files** section, click **jar** to download the **jna-4.3.0.jar** file.
3. Move the downloaded **jna-4.3.0.jar** file to the following folder:  
`C:\Program Files\elasticsearch-5.2.2\lib`
4. In the `C:\Program Files\elasticsearch-5.2.2\lib` folder, delete the **jna-4.2.2.jar** file
5. For existing Elasticsearch installation, restart the **Elasticsearch** service.

## Configuration

Elasticsearch configuration settings reside in the `elasticsearch.yml` configuration file, which must be configured on each Inception or Streamline Server computer in your system.

### To configure Elasticsearch on an Inception or Streamline Server

1. Open an **Administrator** command prompt.
2. Enter the follow command to change to the Elasticsearch configuration folder:

```
cd C:\Program Files\Elasticsearch\config\
```

3. Use a text editor to open and edit the `elasticsearch.yml` file.
4. In the `elasticsearch.yml` file, locate the following setting:

```
#network.host:
```

5. Remove the leading `#` character from the `network.host` setting and change the set IP address to `0.0.0.0` so that other systems can access Elasticsearch on the Inception or Streamline Server. The updated setting looks as follows:

```
network.host: 0.0.0.0
```

6. Locate the following setting:

```
#discovery.zen.ping.unicast.hosts:
```

7. Remove the leading `#` character from the `discovery.zen.ping.unicast.hosts` setting and add the hostnames or IP address of your Inception or Streamline Servers to the setting. The following setting is an example of a configured `discovery.zen.ping.unicast.hosts` setting:

```
discovery.zen.ping.unicast.hosts:  
["192.0.2.1", "192.0.2.2", "192.0.2.3", "192.0.2.4"]
```

8. Locate the following setting:

```
#discovery.zen.minimum_master_nodes:
```

9. Remove the leading `#` character from the `discovery.zen.minimum_master_nodes` setting and use the following settings for your type of system:

- **Standalone** or **Enterprise** — use the following formula to set the minimum master nodes:

```
(<Total Number of Inception or Streamline Servers> / 2) + 1
```

The following setting is an example of a configured `discovery.zen.minimum_master_nodes` setting for an Inception or Streamline system with four servers  $((4 / 2) + 1 = 3)$ :

```
discovery.zen.minimum_master_nodes: 3
```

- **Redundant** — use the following minimum master node settings for the servers in your system:

```
> Server 1 — discovery.zen.minimum_master_nodes: 1
```

```
> Server 2 — discovery.zen.minimum_master_nodes: 2
```

10. If the Elasticsearch installation partition does not have space to store Elasticsearch data, use the `path.data` setting to store data on a partition with enough space. Locate the following setting:

```
#path.data:
```

11. Remove the leading `#` character from the `path.data` setting and change the set folder path to a folder on a partition with enough space to store data, for example:

```
path.data: E:\Elasticsearch\data
```

The `path.data` setting is an optional setting. If you do not remove the leading `#` character from the `path.data` setting, Elasticsearch stores data in the Elasticsearch installation folder.

12. If the Elasticsearch installation partition does not have space to store logs, use the **path.logs** setting to store Elasticsearch logs on a partition with enough space. Locate the following setting:

```
#path.logs:
```

13. Remove the leading # character from the **path.logs** setting and change the set folder path to a folder on a partition with enough space to store Elasticsearch logs, for example:

```
path.logs: E:\Elasticsearch\logs
```

The **path.logs** setting is an optional setting. If you do not remove the leading # character from the **path.logs** setting, Elasticsearch stores logs in the Elasticsearch installation folder.

14. Save the updated **elasticsearch.yml** file and exit the text editor.

## Service

Elasticsearch runs as a service on each Inception or Streamline Server computer in your system.

### To install and run Elasticsearch as a service

1. Open an **Administrator** command prompt.
2. Enter the follow command to change to the Elasticsearch folder:

```
cd C:\Program Files\Elasticsearch\bin\
```

3. Enter the follow command to install Elasticsearch as a service:

```
elasticsearch-service.bat install
```

4. Enter the follow command to start the Elasticsearch service:

```
net start elasticsearch-service-x64
```

5. Use a web browser to open the following URL to check that the Elasticsearch service is running:

```
http://localhost:9200
```

Your web browser should display a message that looks like the following message:

```
{
  "name" : "1_DJp9A",
  "cluster_name" : "elasticsearch",
  "cluster_uuid" : "QrOSlIIfSe-547g1PhohaQ",
  "version" : {
    "number" : "5.2.2",
    "build_hash" : "f9d9b74",
    "build_date" : "2017-02-24T17:26:45.835Z",
    "build_snapshot" : false,
    "lucene_version" : "6.4.1"
  },
  "tagline" : "You Know, for Search"
}
```

6. Complete the following steps to switch the Elasticsearch service to automatic startup:

- a. From the Windows Desktop, press **Windows Key+R**.

The **Run** dialog box opens.

- b. In the **Open** box, type the following application name:

```
services.msc
```

- c. Click **OK**.

The **Services** window opens.

- d. In the **Services** list, right-click the **Elasticsearch** service.  
The **Properties** dialog box opens.
  - e. Use the list to change **Manual** to **Automatic**.
  - f. Save your change.
7. Install and run the Elasticsearch service on each Inception or Streamline Server computer in your system (repeat steps 1 and 6).

## Change Java Heap Sizes

After you install and start the Elasticsearch a service on a Inception or Streamline Server computer, you must use the Elasticsearch Manager to change Java heap size settings.

### To change the heap size settings

1. Open an **Administrator** command prompt.
2. Enter the follow command to change to the Elasticsearch folder:

```
cd C:\Program Files\Elasticsearch\bin\
```

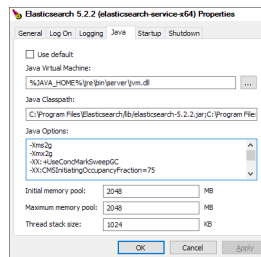
3. Enter the follow command to install Elasticsearch as a service:

```
elasticsearch-service.bat manager
```

The **Elasticsearch Properties** dialog box opens.

4. Click the **Java** tab.

The **Java** tab opens



5. In the **Java Options** section, locate the following setting:

```
-Xms2g
```

6. Replace **-Xms2g** with **-Xms4g** to set the initial heap size to 4g.

7. locate the following setting:

```
-Xmx2g
```

8. Replace **-Xmx2g** with **-Xmx4g** to set the maximum heap size to 4g.

9. In the **Initial memory pool** box, enter 4096.

10. In the **Maximum memory pool** box, enter 4096.

11. Click **OK**.


Elasticsearch saves the Java heap size setting changes and the **Elasticsearch Properties** dialog box closes.

## Select Elasticsearch as the Search Index


After configuring Elasticsearch on each Inception or Streamline Server computer in your system, you can select Elasticsearch as the search index. Inception or Streamline Servers use a search index to increase search performance.

### To select Elasticsearch as the search index

1. Log in to your Inception or Streamline Server as an administrator.

2. On the main toolbar, click the  **Configuration** icon.

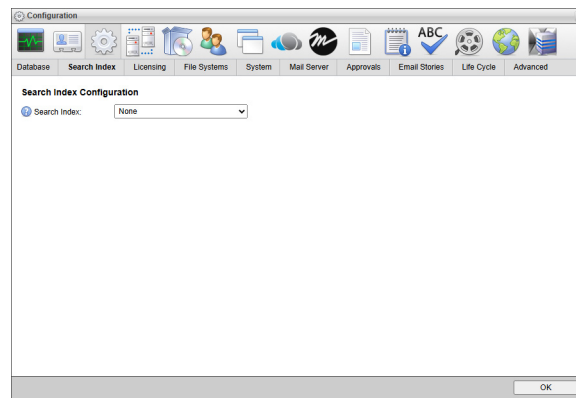
The **Configuration** window opens.

3. On the **Configuration** window toolbar, click the  **System** icon.

The **System** panel opens.

4. Click the **Search Index** tab.

The **Search Index** tab opens.



5. Use the **Driver** list to select **Elasticsearch**.

6. In the **URL** box, enter the URL and port number (`http://<search server>:<port number>`) that the Inception or Streamline Server uses to connect to an external search service. When entering more than one search service URL, use a space to separate consecutive URLs.

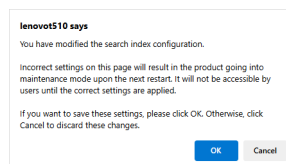
7. In the **Username** box, enter the username that Inception or Streamline uses to access the external search service.

8. In the **Password** box, enter the password associated with the username.

For security purposes, dots replace the entered password.

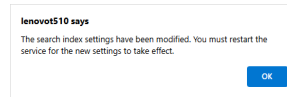
9. In the bottom toolbar, click **OK**.

The modified search index alert opens.



10. Click **OK**.

The restart the service alert opens.

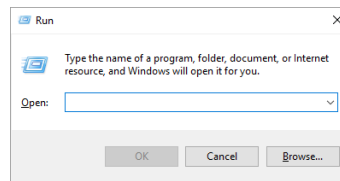


11. Click **OK**.

12. Complete the following steps to restart the Inception or Streamline service to start using the Elasticsearch search index.

a. From the Windows Desktop, press **Windows Key+R**.

The **Run** dialog box opens.

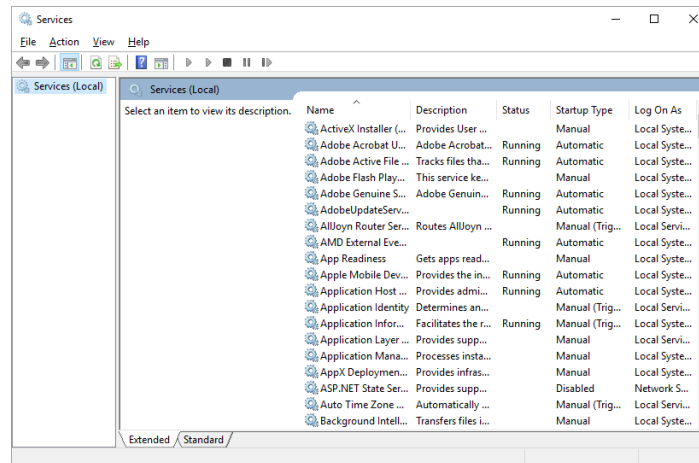


b. In the **Open** box, type the following application name:

`services.msc`

c. Click **OK**.

The **Services** window opens.



d. In the **Services** list, select the **Ross Inception or Ross Streamline** service.

e. Click **Restart** for the selected service.



f. After the selected service restarts, use the **File** menu to select **Exit**.

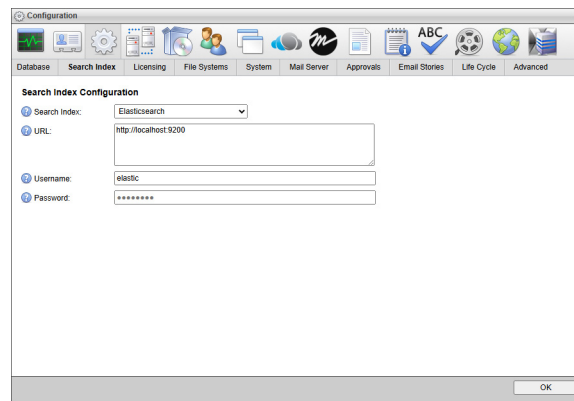
The **Services** window closes.

## Load Balance Elasticsearch

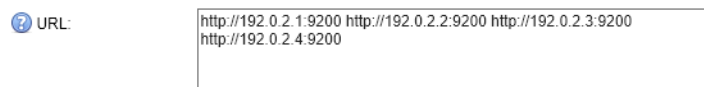
For performance and redundancy, you can load balance Elasticsearch across the servers in your Inception or Streamline system. Complete the following procedure on each Inception or Streamline Server in your system:

### To load balance Elasticsearch

1. Log in to your Inception or Streamline Server as an administrator.
2. On the main toolbar, click the  **Configuration** icon.  
The **Configuration** window opens.
3. On the **Configuration** window toolbar, click the  **System** icon.  
The **System** panel opens.
4. Click the **Search Index** tab.  
The **Search Index** tab opens.



5. Use the **Driver** list to select **Elasticsearch**.
6. In the **URL** box, enter the hostnames or IP addresses set for the **discovery.zen.ping.unicast.hosts** setting in the **elasticsearch.yml** file as a URL and port number (`http://<search server>:<port number>`). Use a space to separate consecutive URLs. The following setting is an example of a configured **URL** setting:



On each Inception or Streamline Server computer in your system, rotate the order of the URLs that you set for the **URL** setting.

7. In the **Username** box, enter the username that Inception or Streamline uses to access the external search service.
8. In the **Password** box, enter the password associated with the username.  
For security purposes, dots replace the entered password.
9. In the bottom toolbar, click **OK**.  
The **Configuration** window closes.

## Search Index Settings

Search index settings within the Inception or Streamline framework are applied in a similar way to database settings. Basic settings (such as the type of index) can be found in the Search Index tab of the Inception or Streamline System Configuration page. Advanced settings can be applied by editing the following files:

C:\Program Files\Ross Video\Inception\workspace\metadata\plugins\com.rossvideo.common.rwp\searchindex.ini

C:\Program Files\Ross Video\Streamline\workspace\metadata\plugins\com.rossvideo.common.rwp\searchindex.ini

- ★ Like the database.ini file, the searchindex.ini file is only present after modifying a setting from the default value on the Search Index tab of the Inception or Streamline System Configuration page.

If the indexes are not yet present, Inception or Streamline creates them on startup (after the database initialization process). Inception or Streamline keeps track of the state of each index using the SEARCH\_INDEX table. To have Inception or Streamline recreate the index, truncate (delete all records) from the SEARCH\_INDEX table and restart Inception or Streamline.

**Table 2.1 Search Index Properties**

Property	Default	Description
searchindex.elasticsearch.discovery.enable	false	Whether to enable automatic discovery of servers in the Elasticsearch cluster.
searchindex.elasticsearch.dynamic.mapping	true	Global setting for dynamic mapping – had to be set to true for adding custom attributes on the fly. See Hibernate Search Documentation.
searchindex.elasticsearch.host	http://localhost:9200	The URL to hit for Elasticsearch. You can specify a space separated list for load balancing. See Hibernate Search Documentation.
searchindex.elasticsearch.index.schema.management.strategy	create	See Hibernate Search Documentation.
searchindex.elasticsearch.max_total_connection	25	Maximum number of simultaneous connections to the Elasticsearch cluster.
searchindex.elasticsearch.max_total_connection_per_route	2	Maximum number of simultaneous connections to a single Elasticsearch server.
searchindex.elasticsearch.password	changeme	Password for Elasticsearch.
searchindex.elasticsearch.refresh.after.write	false	See Hibernate Search.
searchindex.elasticsearch.required.index.status	yellow	The required status for a given index – if it doesn't meet this status hibernate search fails to start up. See Hibernate Search Documentation.
searchindex.elasticsearch.username	elastic	Username for Elasticsearch.
searchindex.massindex.batch.size	25	Batch size to use when pulling records out of the database for mass indexing.

**Table 2.1 Search Index Properties**

Property	Default	Description
searchindex.massindex.threads	2	Number of threads to use while mass indexing. 2 is a conservative value but beware when increasing this number – if Elasticsearch can't keep up, you can run out of heap space.
searchindex.search.index.base	Search index file system Windows: C:\ProgramData\Ross Video\Inception\Search Index Windows: C:\ProgramData\Ross Video\Streamline\Search Index	The location on the file system where the search index resides (if you are using file system index type).
searchindex.search.index.type	filesystem	The type of index to use. Possible values: - none - elasticsearch - filesystem - infinispn (experimental) - jgroupsSlave (experimental) - jgroupsMaster (experimental)
searchindex.search.services.jgroups.clustername	Hibernate Search Cluster	See Hibernate Search Documentation.
searchindex.use.index.for.grids	false	Use the search index when rendering grids (defaulting to false for now due to the current design – setting this to true would sometimes require users to manually refresh after adding new content).

## Streamline Search Index Property Configuration

★ On each Streamline Server computer in your system, you must add a Streamline specific search property setting to the searchindex.ini file.

### To set the searchindex.elasticsearch.refresh.after.write search index property for Streamline

1. On each Streamline Server computer in your system, locate the **searchindex.ini** file in the following folder:

```
C:\Program Files\Ross Video\Streamline\workspace\.metadata\.plugins\com.rossvideo.common.rwp
```

2. Use a text editor to open and edit the **searchindex.ini** file.

3. In the **searchindex.ini** file, add the following search index property:

```
<entry key="searchindex.elasticsearch.refresh.after.write">true</entry>
```

4. Save the updated **searchindex.ini** file and exit the text editor.