

June 2019 Edition

Notices

This information was developed for products and services offered in the US.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
United States of America

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without

incurring any obligation to you.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at “Copyright and trademark information” at www.ibm.com/legal/copytrade.shtml.

© Copyright International Business Machines Corporation 2019. This document may not be reproduced in whole or in part without the prior written permission of IBM.

US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Trademarks

The reader should recognize that the following terms, which appear in the content of this training document, are official trademarks of IBM or other companies:

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide.

The following are trademarks of International Business Machines Corporation, registered in many jurisdictions worldwide:

IBM Cloud™

z/OS®

Java™ and all Java-based trademarks and logos are trademarks or registered trademarks of Oracle and/or its affiliates.

VMware is a registered trademark or trademark of VMware, Inc. or its subsidiaries in the United States and/or other jurisdictions.

Other product and service names might be trademarks of IBM or other companies.

Lab 3: Work with a load-producing application on Event Streams

Duration: 30 minutes

In this exercise, you install another sample application that you can use to generate workloads of a specific size. You can use one of the predefined load sizes, or you can specify your own settings to test throughput.

You must complete Labs 1-2 before proceeding with this lab.

Step 1. Install and configure the workload producer application

1. On the ICP Master virtual machine image, open Firefox and click the **IBM Cloud Private** bookmark tab, or enter the following address in a browser:

```
https://mycluster.icp:8443/
```

2. On the IBM Cloud Private login page, log in with the user ID **admin** and password **admin**.
3. From the hamburger menu, select **Workload > Helm Releases > eslab**.
4. Click **Launch** in the upper right corner, and then select **admin-ui-https**.

IBM Cloud Private

Create resource Catalog Docs Support

← View All

eslab ● Deployed
UPDATED: May 8, 2019 at 10:47 AM

Launch ▲

- brk2-external
- admin-rest-https
- admin-ui-https

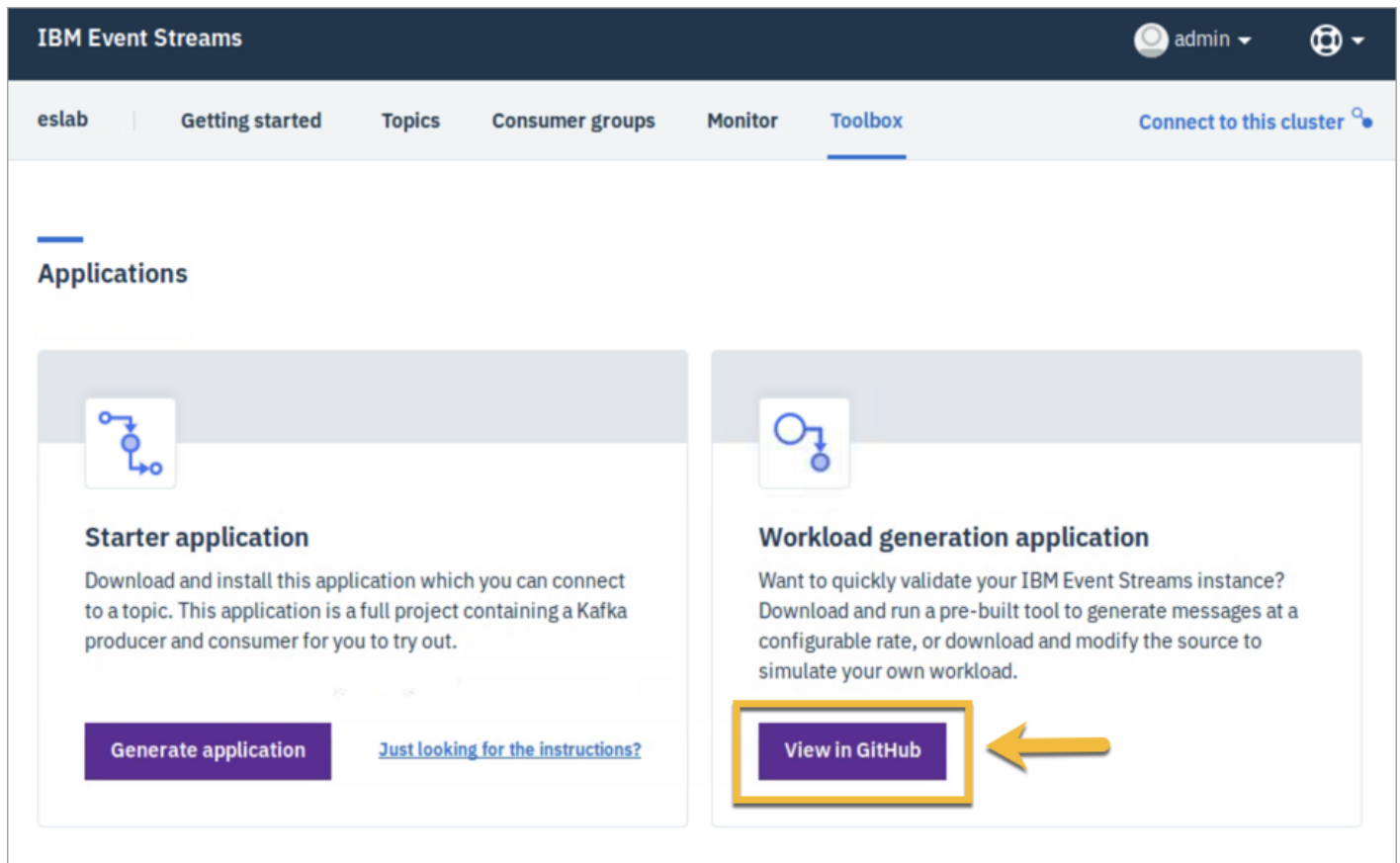
Details and Upgrades

CHART NAME	CURRENT VERSION	AVAILABLE VERSION	
eslab	1.1.0	1.1.0	Upgrade
NAMESPACE			Rollback
es	Installed: May 8, 2019 → Release Notes	Released: May 7, 2019 → Release Notes	

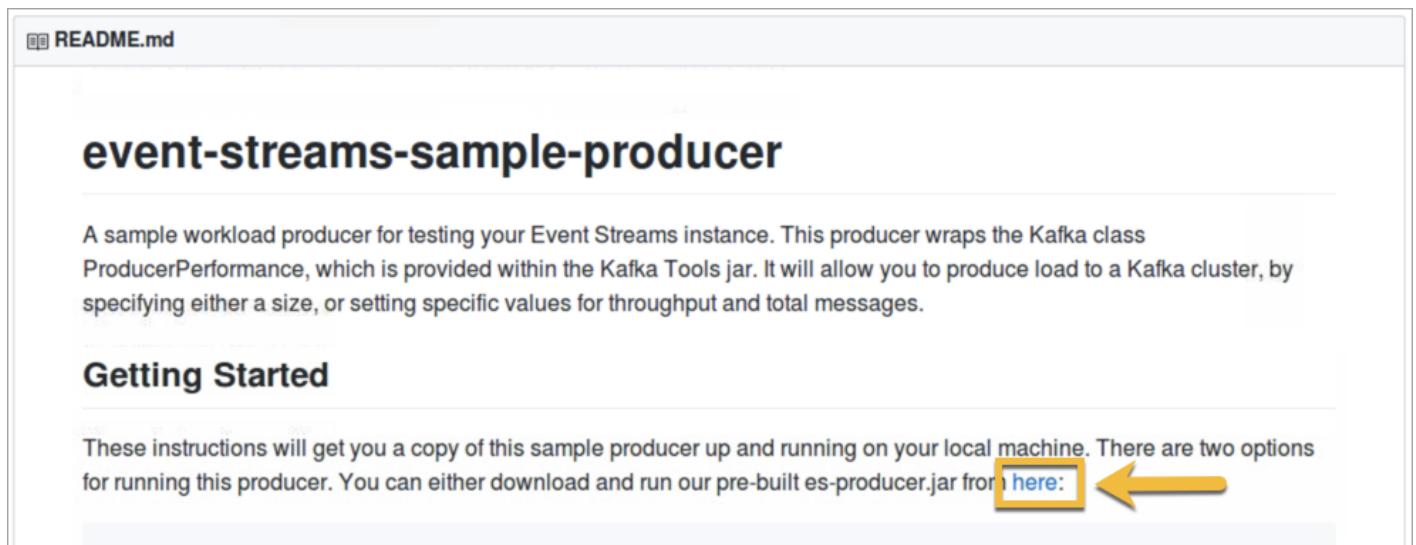
ConfigMap

NAME	DATA	AGE
eslab-ibm-es-replicator-cm	1	30m
eslab-license-accept	1	30m
eslab-ibm-es-metrics-cm	1	30m

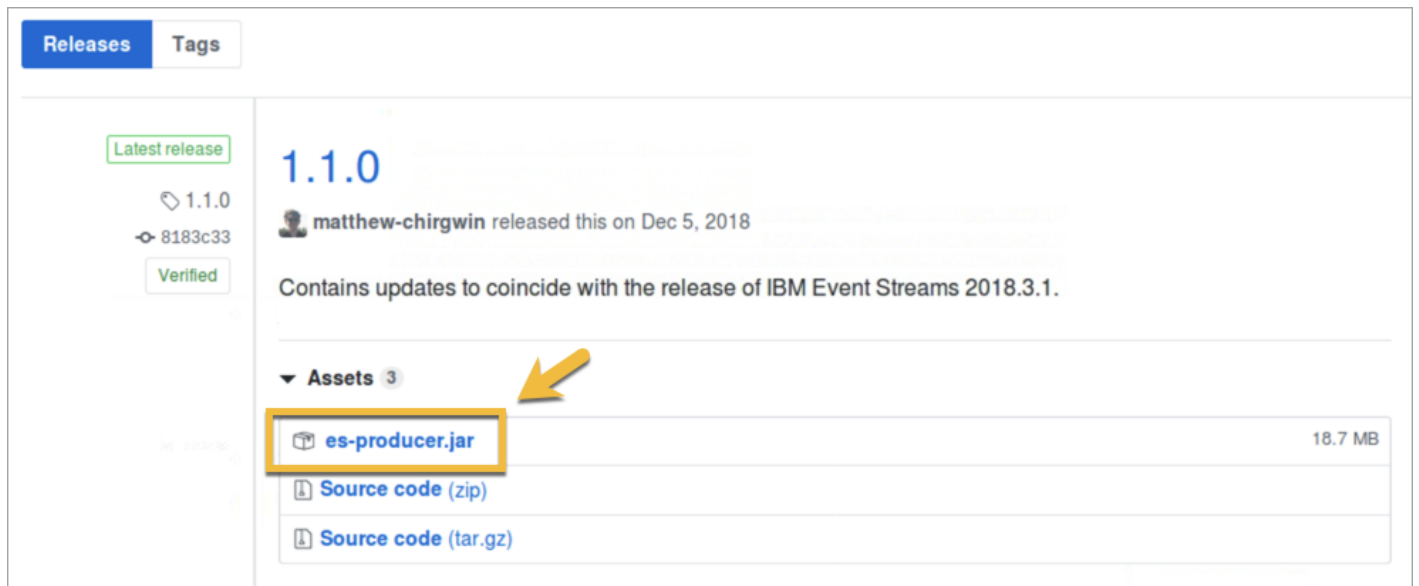
5. Log in with the user ID **admin** and password **admin**.
6. Click the **Toolbox** tab to access tools.
7. Click **View on GitHub** in the Workload generation application.



8. GitHub opens in a new browser tab. Scroll down to the README.md page and click **here**.



9. Under **Latest Release**, click **es-producer.jar** to download it to /home/student/Downloads.



Select **Save file**, and click **OK**.

10. In a command terminal window, change to the Downloads directory (`cd Downloads`) and run the following command:

```
java -jar es-producer.jar -g
```

```
student@master:~/Downloads$ java -jar es-producer.jar -g
A 'producer.config' file has been successfully generated in your current working
directory. Modify this file as described and provide this file to future runs v
ia the --producer.config argument.
student@master:~/Downloads$
```

This command creates the configuration file, `producer.config`.

11. Run the following command to open this file in an editor:

```
gedit producer.config
```

You must add some information to this file that you can find in the Event Streams console.

12. In the Event Streams console, click the **Topics** tab, and then click **eslab**.

eslab

Getting started **Topics** Consumer groups Monitor Toolbox [Connect to this cluster](#)

Topics

[Geo-replication](#) [Create topic](#)

Name	Replicas	Partitions
IBM_Simulated_Topic	3	2
eslab	3	1

13. Click **Connect to this topic**.

← Topics

eslab

Messages Consumer groups [Connect to this topic](#)

☐ All partitions No messages to display for the selected partition [Find message](#)

May 2, 2019, 11:45:14 AM

14. Copy the **Bootstrap server** address.

Topic connection

Connect a client

Sample code

Geo-replication

To connect an application or tool to this cluster, you will need the address of a bootstrap server, a certificate and an API key.

Bootstrap server

Your application or tool will make its initial connection to the cluster using the bootstrap server.

10.0.0.5:32643



API key

To connect securely to Event Streams, your application or tool needs an API key with permission to access the cluster and resources such as topics.



15. Paste this address in to the editor as the value for `bootstrap.servers` .

```
#####
# The parameters in this section must be configured.
#####

# The URL used for bootstrapping knowledge about the rest of the cluster. This address can be
found in the Event Streams UI by clicking on either 'Connect to this cluster' or 'Connect to this
topic', and viewing the 'Connect a client' tab. The value is provided in the 'Bootstrap server'
section.
bootstrap.servers=10.0.0.5:32643

# The location of the JKS keystore used to securely communicate with your Event Streams instance.
This can be downloaded from the Event Streams UI by clicking on either 'Connect to this cluster'
or 'Connect to this topic', viewing the 'Connect a client' tab, and downloading the linked Java
truststore.
ssl.truststore.location=

# The producer API key for your topic should be added in the password field below. API keys can be
set up via the Event Streams UI by clicking on either 'Connect to this cluster' or 'Connect to
this topic', opening the 'Connect a client' tab, and running through the 'API key' creation wizard.
sas.l.jaas.config=org.apache.kafka.common.security.plain.PlainLoginModule required username="token"
password="";
```

16. Go back to the **Topic connection** page and, under **Certificates**, click the icon to download the **Java truststore**.

Certificates

A certificate is required by your Kafka clients to connect securely to this cluster.

Java truststore

Use this for a Java client



Truststore password: password

PEM certificate

Use this for anything else



17. Choose **Save file**, and then enter the full pathname of the file in to the editor as the value for `ssl.truststore.location`.

```
#####
# The parameters in this section must be configured.
#####

# The URL used for bootstrapping knowledge about the rest of the cluster. This address can be
found in the Event Streams UI by clicking on either 'Connect to this cluster' or 'Connect to this
topic', and viewing the 'Connect a client' tab. The value is provided in the 'Bootstrap server'
section.
bootstrap.servers=10.0.0.5:32643

# The location of the JKS keystore used to securely communicate with your Event Streams instance.
This can be downloaded from the Event Streams UI by clicking on either 'Connect to this cluster'
or 'Connect to this topic', viewing the 'Connect a client' tab, and downloading the linked Java
truststore.
ssl.truststore.location=/home/student/Downloads/es-cert.jks

# The producer API key for your topic should be added in the password field below. API keys can be
set up via the Event Streams UI by clicking on either 'Connect to this cluster' or 'Connect to
this topic', opening the 'Connect a client' tab, and running through the 'API key' creation wizard.
sasl.jaas.config=org.apache.kafka.common.security.plain.PlainLoginModule required username="token"
password="";
```

In this case, the pathname is `/home/student/Downloads/es-cert.jks`.

18. Back on the Topic connection page, under **API key**, enter **es-producer** for the application name, and click

Produce only.

API key

To connect securely to Event Streams, your application or tool needs an API key with permission to access the cluster and resources such as topics.

☒ ☐ ☐

Name your application

es-producer

What do you want it to do?

Produce only →

Consume only →

Produce and consume →

Produce, consume and create topics →

19. Click **Generate API key**.

API key

To connect securely to Event Streams, your application or tool needs an API key with permission to access the cluster and resources such as topics.



Start again ↺

Which topic?

All topics ☐

eslab

Generate API key

Connecting your tool or application will generate a service ID using your application name, a service policy and an API key in IBM Cloud Private. Additional API keys can be generated in the IBM Cloud Private Cluster Management Console or CLI.

[IBM Cloud Private Cluster Management Console](#)

20. Click the icon to copy the API key.

API key

To connect securely to Event Streams, your application or tool needs an API key with permission to access the cluster and resources such as topics.

Successful API key generation!

The following API key will allow an application to produce to topic eslab. Take a copy of it or download it now.



Please make a note of this API key now - you will not be able to recover this later!

[Redacted API key]



A service ID has been generated in IBM Cloud Private with your application name. This can be managed in the IBM Cloud Private Cluster Management Console or CLI.

[Create a new API key](#) ↻

21. Paste the API key in to the editor as the value for password. Paste between the double quotations marks.

```
#####  
# The parameters in this section must be configured.  
#####  
  
# The URL used for bootstrapping knowledge about the rest of the cluster. This address can be  
found in the Event Streams UI by clicking on either 'Connect to this cluster' or 'Connect to this  
topic', and viewing the 'Connect a client' tab. The value is provided in the 'Bootstrap server'  
section.  
bootstrap.servers=10.0.0.5:32643  
  
# The location of the JKS keystore used to securely communicate with your Event Streams instance.  
This can be downloaded from the Event Streams UI by clicking on either 'Connect to this cluster'  
or 'Connect to this topic', viewing the 'Connect a client' tab, and downloading the linked Java  
truststore.  
ssl.truststore.location=/home/student/Downloads/es-cert.jks  
  
# The producer API key for your topic should be added in the password field below. API keys can be  
set up via the Event Streams UI by clicking on either 'Connect to this cluster' or 'Connect to  
this topic', opening the 'Connect a client' tab, and running through the 'API key' creation wizard.  
sasl.jaas.config=org.apache.kafka.common.security.plain.PlainLoginModule required username="token"  
password="aX2: - 2021-09-06 10:00:00 [Redacted API key]";
```

22. Save and close the `producer.config` file.

23. In the Event Streams console, click the **X** on the Topic connection page to close it.

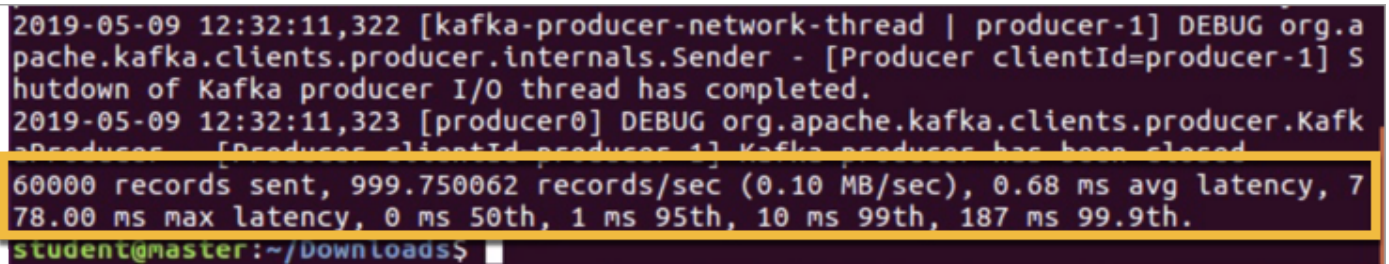
Step 2. Run the application with load

1. In a command terminal window, in the directory where you saved the es-producer.jar file (/home/student/Downloads), run the following command:

```
java -jar es-producer.jar -t eslab -s small
```

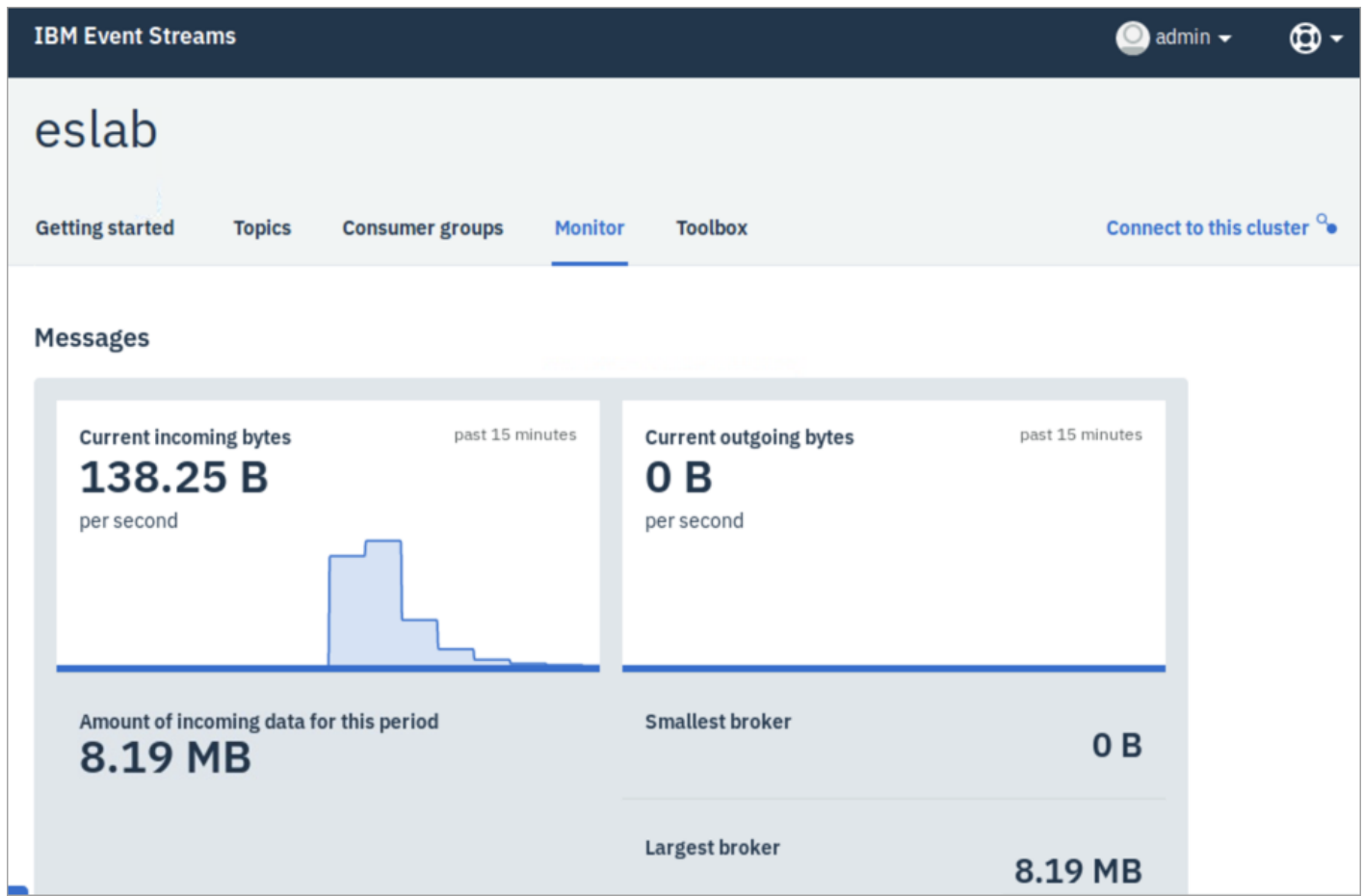
This command specifies `eslab` for the Topic, and a predefined `small` size load.

The output scrolls by very quickly, and then concludes with a message that reports the number of messages sent and some details about performance.

A terminal window screenshot with a dark background and light-colored text. The text shows Kafka producer logs. The final line of the output is highlighted with a yellow rectangular box. The highlighted text reads: "60000 records sent, 999.750062 records/sec (0.10 MB/sec), 0.68 ms avg latency, 778.00 ms max latency, 0 ms 50th, 1 ms 95th, 10 ms 99th, 187 ms 99.9th." Below this, the terminal prompt "student@master:~/Downloads\$" is visible.

```
2019-05-09 12:32:11,322 [kafka-producer-network-thread | producer-1] DEBUG org.a
pache.kafka.clients.producer.internals.Sender - [Producer clientId=producer-1] S
hutdown of Kafka producer I/O thread has completed.
2019-05-09 12:32:11,323 [producer0] DEBUG org.apache.kafka.clients.producer.Kafk
aProducer - [Producer clientId=producer-1] Kafka producer has been closed
60000 records sent, 999.750062 records/sec (0.10 MB/sec), 0.68 ms avg latency, 7
78.00 ms max latency, 0 ms 50th, 1 ms 95th, 10 ms 99th, 187 ms 99.9th.
student@master:~/Downloads$
```

2. Go back to the Event Streams console and click the **Monitor** tab.



Here you see some metrics for the small load. Scroll down to see all the information that is available. The data refreshes every few seconds. You learn more about monitoring later in this course.

- Run the test again, but this time with a larger load. In a command terminal window, run the following command:

```
java -jar es-producer.jar -t eslab -s large
```

- Go back to the **Monitor** tab in the Event Streams console and notice what happens while the test runs. Notice the differences between running the small load and the large load.

If you want, you can also go back to the previous lab and run the starter application (consumer) again, and monitor the results in the console.

End of exercise