

Comparative Process Mining

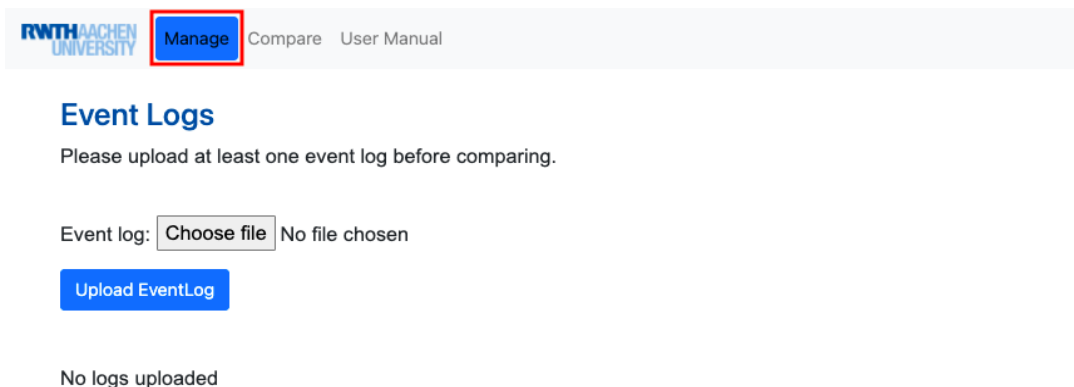
User Manual

Overview

1. Uploading event logs
2. Deleting event logs
3. Choose Number of Comparisons
4. Select Uploaded Event Logs
5. Pick Reference Log
6. Select Filter
7. Reset Filter
8. Directly-Follows Graph (DFG)
9. Metrics
10. PDF Download
11. New Comparison

1. Uploading event logs

Please click the "Manage" button on the navigation bar to get to the page where you can upload a new event log.



The screenshot shows the top navigation bar of the RWTH Aachen University Comparative Process Mining application. The 'Manage' button is highlighted with a red box. Below the navigation bar, the 'Event Logs' section is visible, featuring a message to upload at least one event log, a file selection interface with a 'Choose file' button, an 'Upload EventLog' button, and a status message 'No logs uploaded'.

RWTH AACHEN UNIVERSITY Manage Compare User Manual

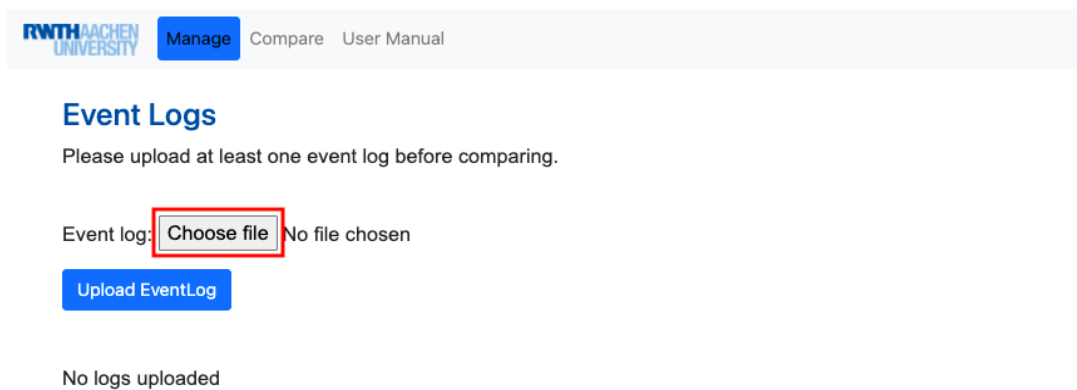
Event Logs

Please upload at least one event log before comparing.

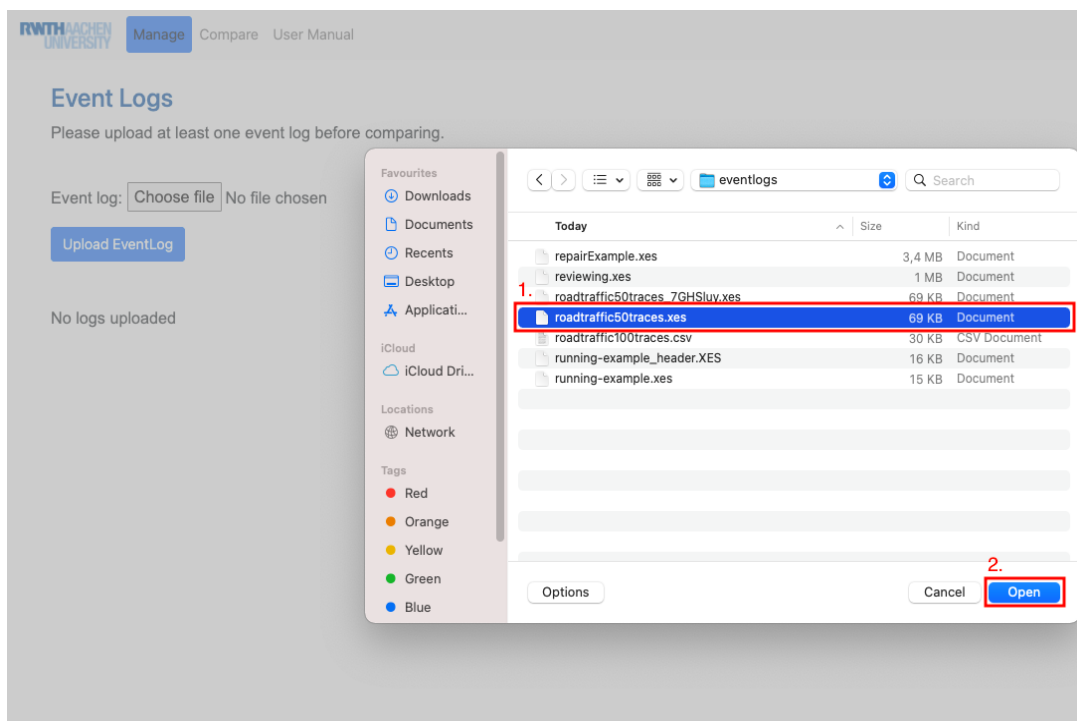
Event log: No file chosen

No logs uploaded


After you are on the Manage page of the tool, please click the "Choose file" button.



1. Choose a .xes/.csv file you want to upload.
2. Please click the "Open" button.



After the .xes/.csv file is chosen, the final step is to click the "Upload EventLog" button to upload it.



Manage

Compare

User Manual

Event Logs


Please upload at least one event log before comparing.

Event log: roadtraffic50traces.xes

Upload EventLog

No logs uploaded

If your upload was successful, you will see the following "Upload successful" message.



Manage

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User Manual

Event Logs

Please upload at least one event log before comparing.

Upload successful

Event log: No file chosen


Upload EventLog

roadtraffic50traces.xes

Delete

2. Deleting event logs

1. Click on the uploaded event log that you want to delete.
2. Click the "Delete" button to erase the selected event log.

 [Manage](#) [Compare](#) [User Manual](#)

Event Logs

Please upload at least one event log before comparing.

Event log: No file chosen


roadtraffic50traces.xes

1.

Delete

2.

If your deletion was successful, you will see the following "Successfully deleted" message.

 [Manage](#) [Compare](#) [User Manual](#)

Event Logs

Please upload at least one event log before comparing.

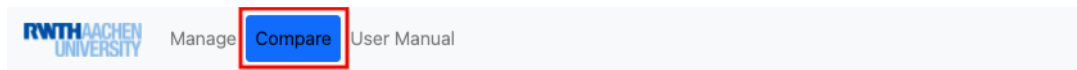
Successfully deleted

Event log: No file chosen

No logs uploaded

3. Choose Number of Comparisons

Please click the "Compare" button on the navigation bar to get to the "Compare" page where you can choose the number of comparisons.

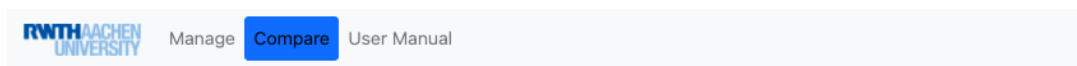


Choose Number of Comparisons:

Please select a number of comparisons between 2 and 8.

Continue

1. Please select the number of comparisons you want to make between 2 and 8.
2. Click the "Continue" button to confirm your choice.



Choose Number of Comparisons:

Please select a number of comparisons between 2 and 8.


1.

Continue

2.

4. Select Uploaded Event Logs

Please click the drop-down lists to select the uploaded event logs you would like to compare. (The number of drop-down lists corresponds to the previously selected number of comparisons.)

 [Manage](#) [Compare](#) [User Manual](#)

Select Uploaded Event Logs:

Please choose the uploaded event logs you want to compare.


roadtraffic50traces.xes

roadtraffic50traces.xes

roadtraffic50traces.xes

Continue

Please choose an event log from the displayed drop-down lists that will be shown later in the comparison.

 [Manage](#) [Compare](#) [User Manual](#)

Select Uploaded Event Logs:

Please choose the uploaded event logs you want to compare.

roadtraffic50traces.xes


✓ roadtraffic50traces.xes

roadtraffic100traces.csv

running-example.xes

Continue

After you have completed your selection, click the "Continue" button to confirm it.

ManageCompareUser Manual

Select Uploaded Event Logs:

Please choose the uploaded event logs you want to compare.

roadtraffic50traces.xes


roadtraffic100traces.csv

running-example.xes

Continue

5. Pick Reference Log

As a default implementation the first (far left) log is the reference log. The reference log can be recognized by the green font of the event log title. If you click the title of another event log, this log will be selected as the new reference log.

ManageCompareUser Manual

Frequency

Select Filter

Apply Filter

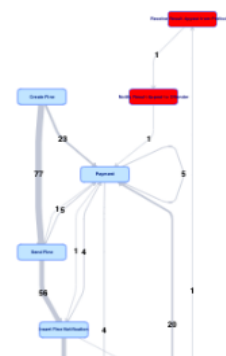
Frequency

Select Filter


Apply Filter



roadtraffic50traces.xes



roadtraffic100traces.csv



Consequently, the new reference log can be recognized by the green writing of its title.



Manage Compare User Manual

Frequency 
Select Filter 
Apply Filter

Frequency 
Select Filter 
Apply Filter

roadtraffic50traces.xes


roadtraffic100traces.csv







6. Select Filter

6.1. Choose Edge Labelling:

Click on the first (top) filter to select the edge label.



Manage Compare User Manual

Frequency 
Select Filter 
Apply Filter


Frequency 
Select Filter 
Apply Filter

roadtraffic50traces.xes

roadtraffic100traces.csv



For the graphical depiction of the edge labels in the Directly-Follows Graph (DFG), you can select either "Frequency" or "Performance".


[Manage](#)
[Compare](#)
[User Manual](#)

✓ Frequency

Performance

Apply Filter

Frequency

Select Filter

Apply Filter

[roadtraffic50traces.xes](#)
[roadtraffic100traces.csv](#)


```

graph TD
    A[Create File] -- 39 --> B[Send File]
    B -- 32 --> C[Insert File Notification]
    C -- 1 --> D[Insert Data Append to Performance]
    A -- 12 --> D
  
```

```

graph TD
    A[Create File] -- 28 --> B[Send File]
    B -- 77 --> C[Insert File Notification]
    C -- 16 --> D[Insert Data Append to Performance]
    D -- 58 --> E[Insert Data Append to Performance]
    A -- 1 --> E
    B -- 1 --> E
    C -- 1 --> E
    D -- 4 --> E
  
```

In addition, there is another option for choosing between different time units when selecting "Performance". To do this, click on the list with the default label "Seconds" and select the appropriate time unit.


[Manage](#)
[Compare](#)
[User Manual](#)

Performance

Seconds

Apply Filter

Frequency

Select Filter

Apply Filter

[roadtraffic50traces.xes](#)
[roadtraffic100traces.csv](#)

```

graph TD
    A[Create File] -- 39 --> B[Send File]
    B -- 32 --> C[Insert File Notification]
    C -- 1 --> D[Insert Data Append to Performance]
    A -- 12 --> D
  
```

```

graph TD
    A[Create File] -- 28 --> B[Send File]
    B -- 77 --> C[Insert File Notification]
    C -- 16 --> D[Insert Data Append to Performance]
    D -- 58 --> E[Insert Data Append to Performance]
    A -- 1 --> E
    B -- 1 --> E
    C -- 1 --> E
    D -- 4 --> E
  
```

You can select between the following time units for the visualization:

- "Seconds"
- "Minutes"
- "Hours"
- "Days"

Performance

Select Filter

Apply Filter

✓ Seconds

Minutes

Hours

Days

Frequency

Select Filter

Apply Filter

roadtraffic50traces.xes

roadtraffic100traces.csv

```
graph TD; A[Create File] -- 39 --> B[Send File]; B -- 32 --> C[Import Flow Notification]; C -- 1 --> D[Insert Data Applet to Profile]; D -- 1 --> E[ ]; E -- 12 --> F[ ]; style E fill:none,stroke:none; style F fill:none,stroke:none;
```

```
graph TD; A[Create File] -- 28 --> B[Import Flow Notification]; B -- 77 --> C[Send File]; C -- 16 --> D[Insert Data Applet to Profile]; D -- 1 --> E[ ]; E -- 20 --> F[ ]; style E fill:none,stroke:none; style F fill:none,stroke:none;
```

As an example, you can see the time unit selection "Days".

Performance

Select Filter

Apply Filter

Days

Frequency

Select Filter

Apply Filter

roadtraffic50traces.xes

roadtraffic100traces.csv

```
graph TD; A[Create File] -- 39 --> B[Send File]; B -- 32 --> C[Import Flow Notification]; C -- 1 --> D[Insert Data Applet to Profile]; D -- 1 --> E[ ]; E -- 12 --> F[ ]; style E fill:none,stroke:none; style F fill:none,stroke:none;
```

```
graph TD; A[Create File] -- 28 --> B[Import Flow Notification]; B -- 77 --> C[Send File]; C -- 16 --> D[Insert Data Applet to Profile]; D -- 1 --> E[ ]; E -- 20 --> F[ ]; style E fill:none,stroke:none; style F fill:none,stroke:none;
```

6.2. Selected Filter Type:

Click the "Select Filter" list to select a filter.

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Manage

Compare

User Manual

Frequency

Select Filter

Apply Filter

Frequency

Select Filter

Apply Filter


roadtraffic50traces.xes


roadtraffic100traces.csv




The selectable filters are:

- "Case Performance"
- "Between Filter"
- "Case Size"
- "Timestamp (Contained)"
- "Timestamp (Intersecting)"
- "Filter on Attributes"


Manage Compare User Manual


Frequency 


 Select Filter

Case Performance

Between Filter



Case Size
Timestamp (Contained)
Timestamp (Intersecting)
Filter on Attributes

Frequency 

Select Filter 

Apply Filter

roadtraffic100traces.csv

6.3. Two Example Cases to demonstrate the selection and application of the filters:

- 6.3.1. Between Filter
- 6.3.2. Filter on Attributes

6.3.1. Between Filter:

After you have selected "Between Filter" in the "Select Filter" list, click on the first list below the list in which you previously selected the "Between Filter".

(As a default choice you will see one activity of the Event Log (In this case: "Create Fine").)

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[Manage](#) [Compare](#) [User Manual](#)

Frequency ▾
Between Filter ▾
Create Fine ▾
Create Fine ▾
Apply Filter


Frequency ▾
Select Filter ▾
Apply Filter

roadtraffic50traces.xes

roadtraffic100traces.csv



Next, choose the first (start) activity. The first one will be the start activity and the second one the end activity.


[Manage](#)
[Compare](#)
[User Manual](#)

Frequency ▾

Between Filter ▾

☒ Create Fine

Send Fine

Insert Fine Notification

Add penalty

Send for Credit Collection

Payment

Insert Date Appeal to Prefecture

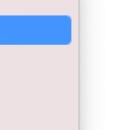
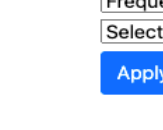
Send Appeal to Prefecture

Frequency ▾


Select Filter ▾

Apply Filter

[roadtraffic100traces.csv](#)

Then click on the second list below the list in which you previously selected the "Between Filter".
(As a default choice you will also see one activity of the Event Log (In this case: "Create Fine").)



[Manage](#)
[Compare](#)
[User Manual](#)

Frequency ▼

Between Filter ▼

Send Fine ▼

Create Fine ▼



[Apply Filter](#)

Frequency ▼


Select Filter ▼

[Apply Filter](#)

roadtraffic50traces.xes
roadtraffic100traces.csv

Next, select the second (end) activity.



[Manage](#)
[Compare](#)
[User Manual](#)

Frequency ▼

Between Filter ▼

Send Fine ▼

✓ Create Fine

Send Fine

Insert Fine Notification

Add penalty

Send for Credit Collection

Payment

Insert Date Appeal to Prefecture

Send Appeal to Prefecture



[Apply Filter](#)

Frequency ▼

Select Filter ▼

[Apply Filter](#)

roadtraffic100traces.csv

Lastly, click on "Apply Filter" to apply the selected Between Filter.

ManageCompareUser Manual

Frequency ▾

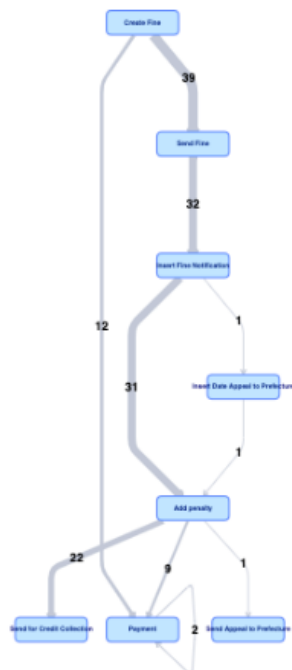
Between Filter ▾

Send Fine ▾


Add penalty ▾

Apply Filter

roadtraffic50traces.xes



In this case the following Directly-Follows Graph is the result.

Manage Compare User Manual

Frequency ▾

Between Filter ▾

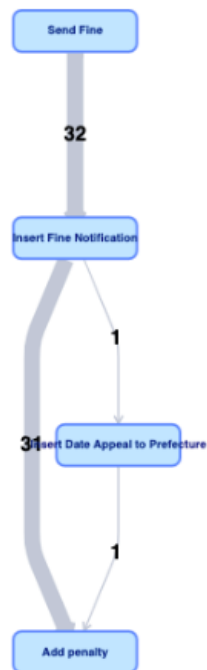
Send Fine ▾

Add penalty ▾

Apply Filter

Reset Filter


roadtraffic50traces.xes



6.3.2. Filter on Attributes:

For each type of Attribute Filter, there are multiple attributes to choose from or options for entering a value for filtering.

First, click the attribute list to select an Attribute Filter type. As a default selection you will see an attribute of the Event Log (In this case: "amount").


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[Manage](#)
[Compare](#)
[User Manual](#)

Frequency ▾

Filter on Attributes ▾ amount ▾

Apply Filter


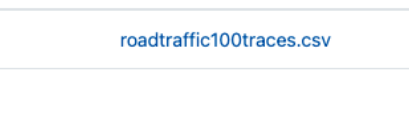
Frequency ▾

Select Filter ▾

Apply Filter

roadtraffic50traces.xes

roadtraffic100traces.csv

Next, choose the attribute from the list that you want to use for filtering.

The screenshot displays the RWTH Aachen University Data Explorer interface. It features two identical filter panels side-by-side. Each panel includes a 'Frequency' dropdown, a 'Filter on Attributes' dropdown, and an 'Apply Filter' button. Below the filters, the dataset names are shown: 'roadtraffic50traces.xes' on the left and 'roadtraffic100traces.csv' on the right.

Left Panel:

- Frequency: [Dropdown]
- Filter on Attributes: [Dropdown] (Menu is open)
- Apply Filter
- Dataset: roadtraffic50traces.xes


Right Panel:

- Frequency: [Dropdown]
- Select Filter: [Dropdown]
- Apply Filter
- Dataset: roadtraffic100traces.csv

Open Filter Menu (Left Panel):

- amount
- org:resource
- dismissal
- concept:name
- vehicleClass
- totalPaymentAmount
- lifecycle:transition
- time:timestamp
- article** (highlighted)
- points
- case:concept:name
- expense
- notificationType
- lastSent
- paymentAmount

Then select the parameters that correspond to the filtering you want. For this specific type of attribute filtering, click on the associated list.

 Manage Compare User Manual


Frequency ▾
Filter on Attributes ▾ article ▾ 7.0 ▾ <= ▾
Apply Filter

Frequency ▾
Select Filter ▾
Apply Filter

[roadtraffic50traces.xes](#)[roadtraffic100traces.csv](#)



Next, select a value from the list.

 Manage Compare User Manual


Frequency ▾
Filter on Attributes ▾ article ▾ ✓ 7.0 ▾ 157.0 ▾ <= ▾
Apply Filter

Frequency ▾
Select Filter ▾
Apply Filter

[roadtraffic50traces.xes](#)[roadtraffic100traces.csv](#)



Then click on the associated operator list.



Manage

Compare

User Manual

Frequency ▼

Filter on Attributes ▼ | article ▼ | 157.0 ▼ | **<=** ▼

Apply Filter


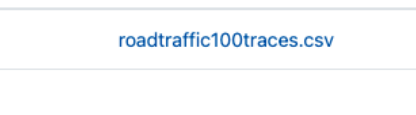
Frequency ▼

Select Filter ▼

Apply Filter

roadtraffic50traces.xes

roadtraffic100traces.csv

Please select an operator that corresponds to the filtering you want.

[Manage](#)
[Compare](#)
[User Manual](#)

Frequency ▾

Filter on Attributes ▾

article ▾

157.0 ▾

✓ <=

>=

=

≠

Apply Filter

Frequency ▾


Select Filter ▾

Apply Filter

roadtraffic50traces.xes



roadtraffic100traces.csv

Lastly, click on "Apply Filter" to apply the selected Attribute Filter.



[Manage](#) [Compare](#) [User Manual](#)

Frequency 


Filter on Attributes  article  157.0  \neq 

Apply Filter

[roadtraffic50traces.xes](#)



In this case the following Directly-Follows Graph is the result.

Manage Compare User Manual

Frequency ▾

Filter on Attributes ▾ article ▾ 157.0 ▾ ≠ ▾

Apply Filter


Reset Filter

roadtraffic50traces.xes



7. Reset Filter

Please click the "Reset Filter" button to reset the applied filters.

 [Manage](#) [Compare](#) [User Manual](#)

Frequency ▾

Select Filter ▾

Create Fine ▾

Create Fine ▾


Apply Filter

Reset Filter

roadtraffic50traces.xes



After that, the following Directly-Follows Graph without any applied filters is the result.

Manage Compare User Manual

Frequency ▾

Select Filter ▾

Apply Filter

roadtraffic50traces.xes



8. Directly-Follows Graph (DFG)

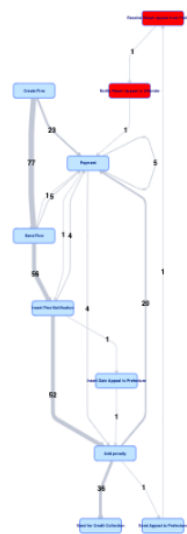
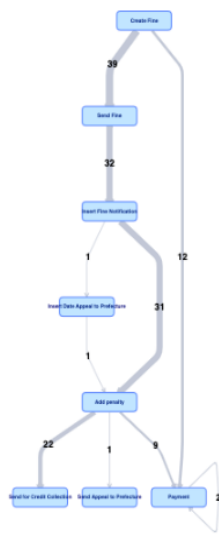
The Directly-Follows Graphs (DFGs) show all the event logs based on the filters previously selected.

In addition, all displayed DFGs are compared with the reference log (See: “5. Pick Reference Log”).

If nodes are part of the reference log, they are highlighted in blue. If nodes are not part of the reference log, they are highlighted in red.

roadtraffic50traces.xes

roadtraffic100traces.csv



9. Metrics

The metrics of all event logs displayed are shown. In addition, if an event log is different from the reference log, the difference between the logs is also displayed.

(A filtered log that is identical to the reference log, but with chosen filters that lead to a different DFG, is also counted as a different log.)

Similarity: 100%	Similarity: 50.51%
Number of Cases: 51	Number of Cases: 100 (+49)
Number of Events: 201	Number of Events: 390 (+189)
Number of Variants: 6	Number of Variants: 10 (+4)
Number of Activities: 8	Number of Activities: 10 (+2)
Average Case Duration: 434d 14h 7m 3s	Average Case Duration: 312d 11h 15m 36s (-123d 21h 8m 32s)
Median Case Duration: 550d 0h 0m 0s	Median Case Duration: 267d 0h 0m 0s (-283d 0h 0m 0s)
Total Case Duration: 22164d 0h 0m 0s	Total Case Duration: 31246d 22h 0m 0s (+9082d 22h 0m 0s)

10. PDF Download

After choosing the appropriate event logs and filters and displaying the DFGs and metrics, it is now possible to export the collected information and results in PDF format by clicking on the "Download" button.

	Number of Cases: 100 (+49)	Number of C
	Number of Events: 390 (+189)	Number of E
	Number of Variants: 10 (+4)	Number of V
	Number of Activities: 10 (+2)	Number of A
	Average Case Duration: 312d 11h 15m 36s (-123d 21h 8m 32s)	Average Cas
	Median Case Duration: 267d 0h 0m 0s (-283d 0h 0m 0s)	Median Case
	Total Case Duration: 31246d 22h 0m 0s (+9082d 22h 0m 0s)	Total Case D



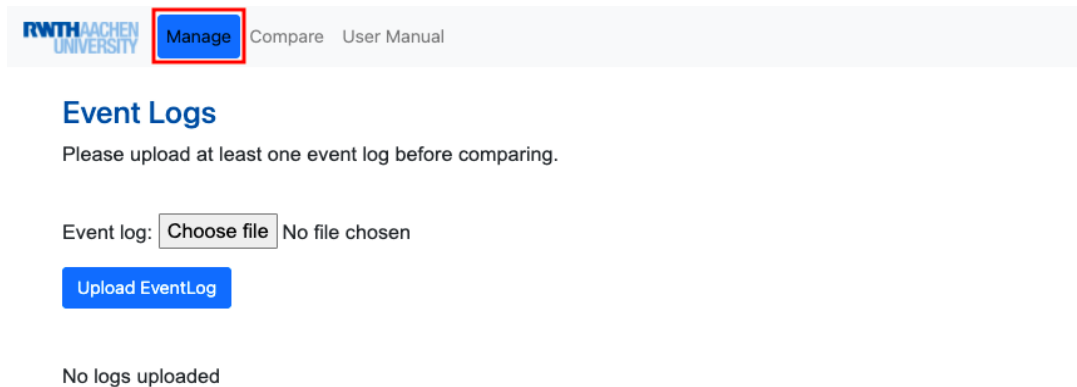
Please click on the download button to export your results as a PDF.

11. New Comparison

From the navigation bar, click either the "Compare" or "Manage" button.

"Compare" is the right choice if you do not want to upload an additional event log before the new comparison.

Accordingly, proceed with "3. Choose Number of Comparisons" in the User Manual.



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Manage Compare User Manual

Event Logs

Please upload at least one event log before comparing.

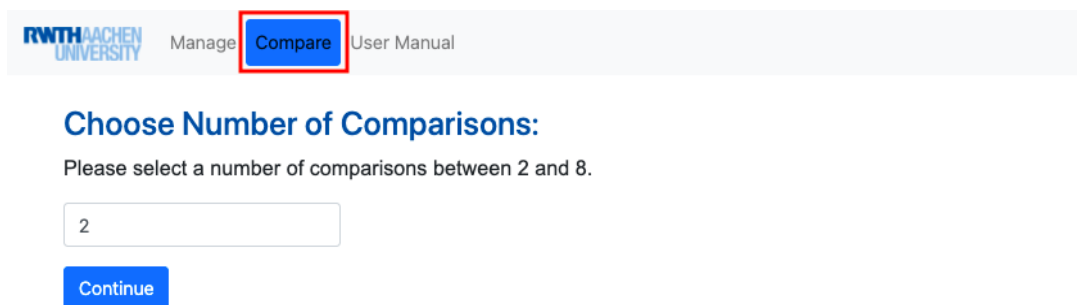
Event log: Choose file No file chosen

Upload EventLog

No logs uploaded

However, if you would like to upload a new event log first, please go to the "Manage" page and upload it.

Correspondingly, proceed with "1. Uploading event logs" in the User Manual.



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Manage Compare User Manual

Choose Number of Comparisons:

Please select a number of comparisons between 2 and 8.

2

Continue