

experiment

May 10, 2023

1 Test Inspektor Gadget scaling with `grpc`

The goal of this experiment is to test until which number of nodes Inspektor Gadget scales now that we use `grpc` to get the events stream.

1.1 Experimental environment

1.1.1 Hardware environment

Inspektor Gadget will be tested on an AKS cluster using `Standard_DS2_v2` as node Azure image (*i.e* 2 CPU cores and 7 GB of DRAM). The number of nodes will vary over the experience with the following values: 2, 5, 11, 17, 23, 31 and 39. The number of nodes were chosen to be one over two prime number until 39 (which is non prime though).

1.1.2 Software environment

To test scaling, the idea is to deploy a pod on each nodes which will generate a lot of `exec()` and to count the number of `exec()` events reported by Inspektor Gadget. So, on each node, a pod running `stress-ng` is deployed to generate as many `exec()` it can during 1 second on all the node CPU (in our case 2). Before that, Inspektor gadget is deployed on the cluster to monitor all these pods (which belong to the same namespace). The experiment is described in `script.sh`.

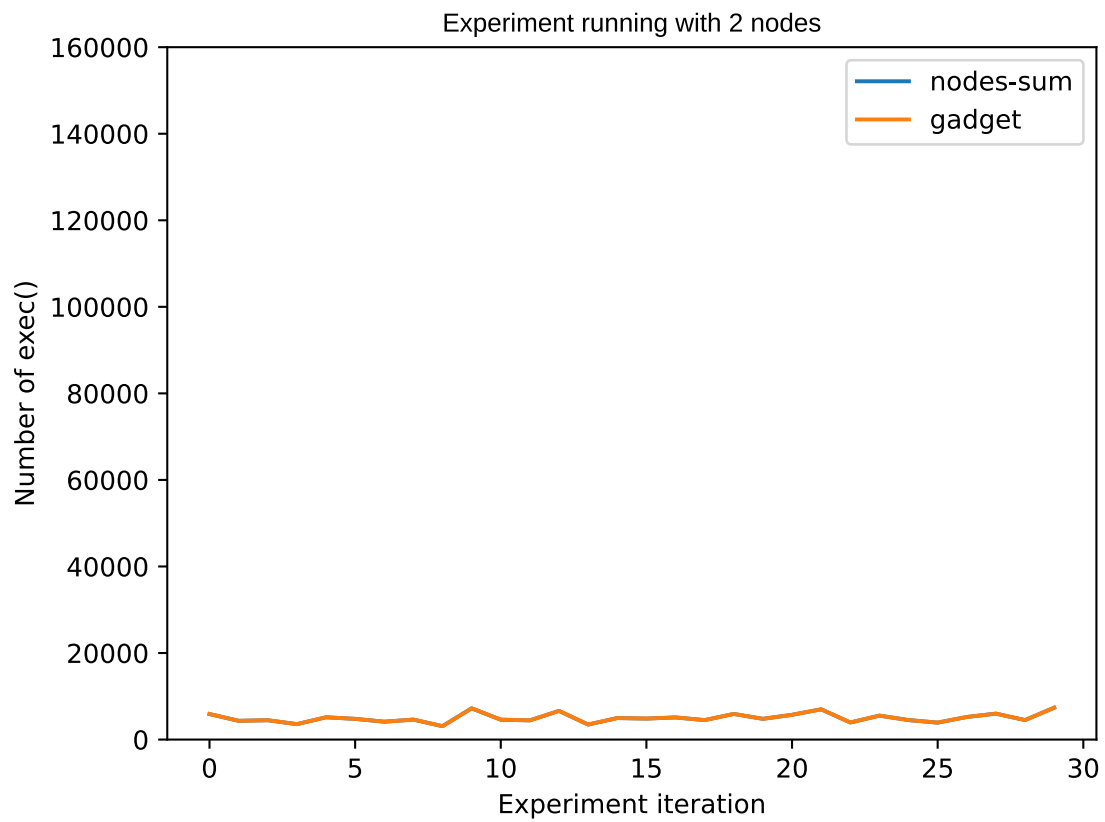
1.1.3 Statistics

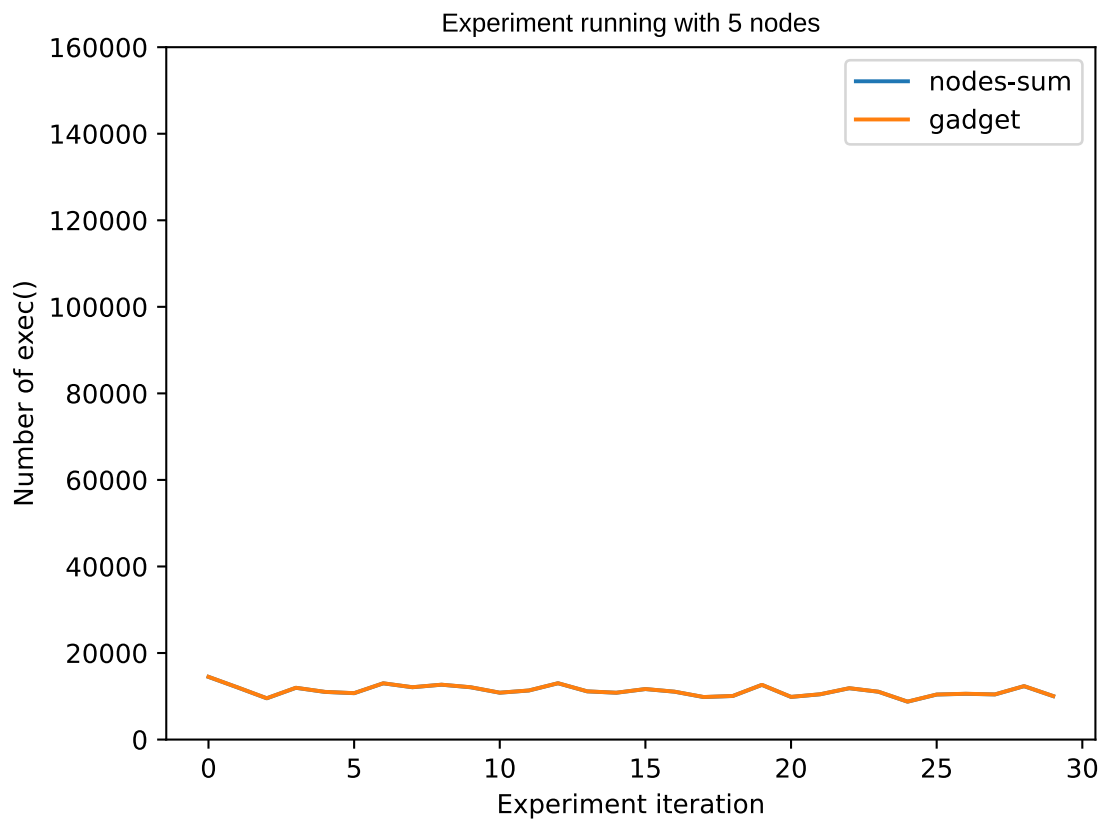
For each number of node, the above experiment is run 30 times to compute some statistics.

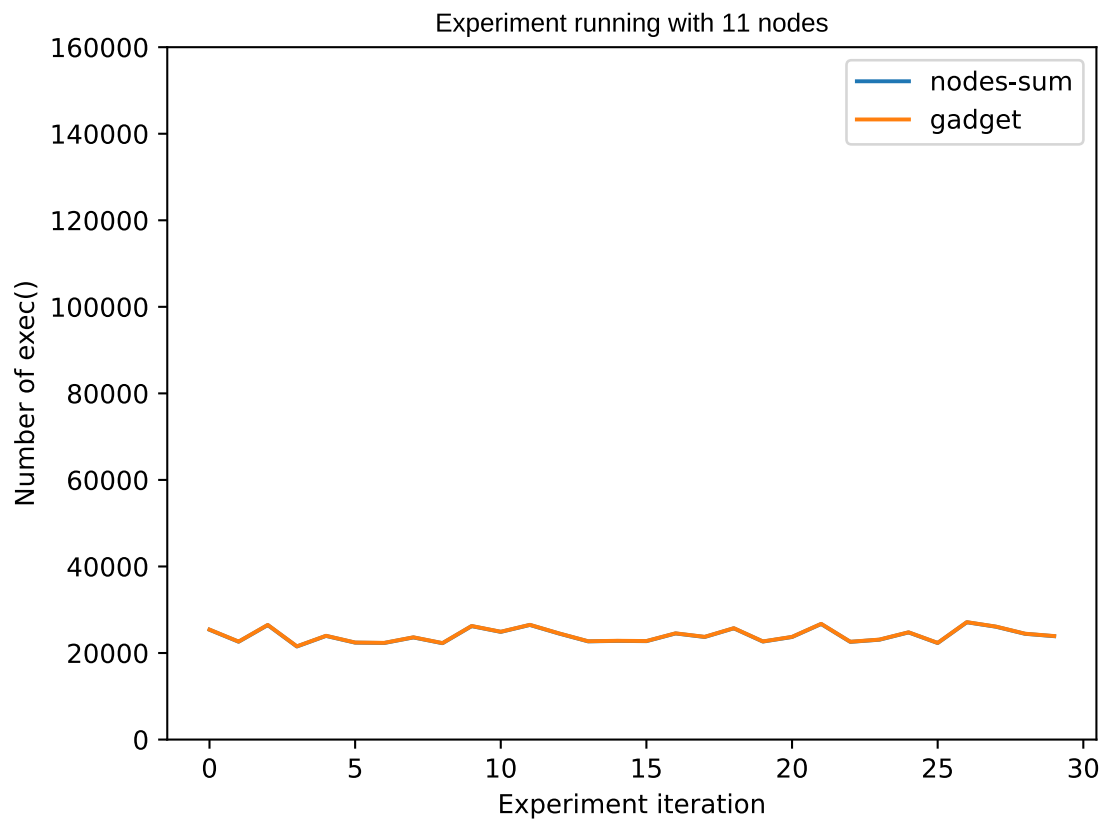
1.2 Results

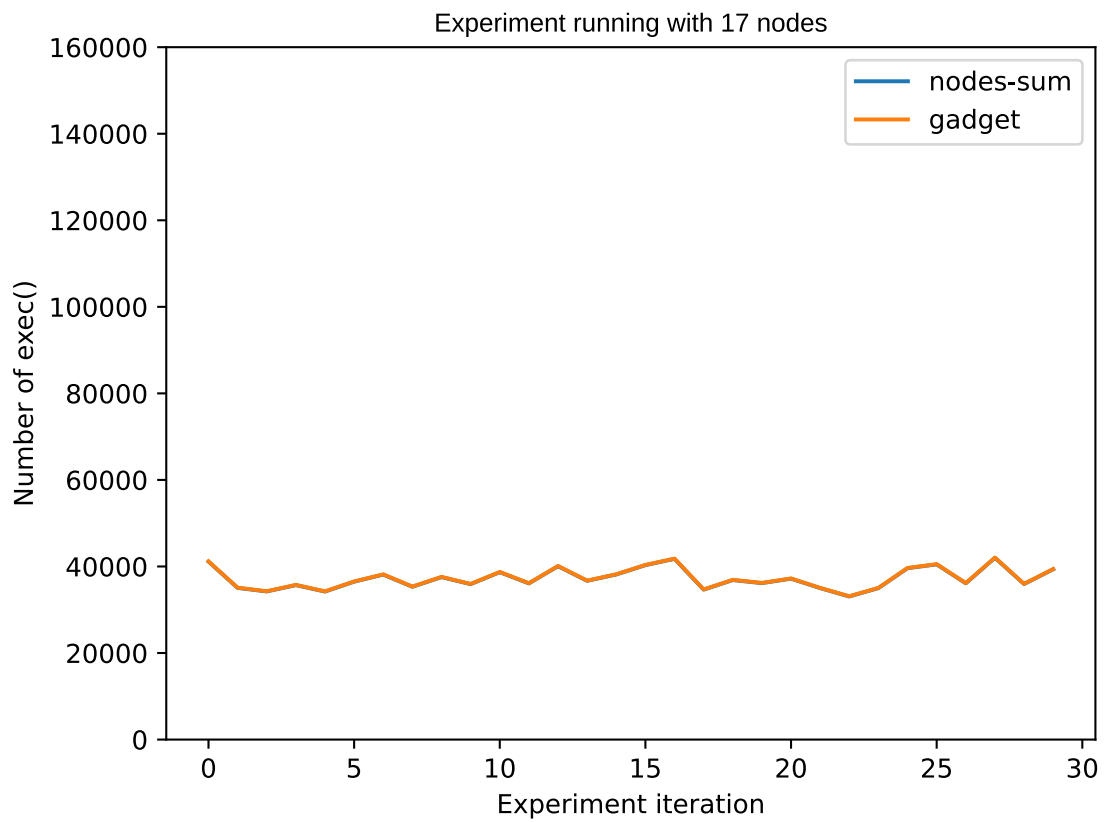
The results are depicted in the following graphs. The `x` axis indicates the experiment number from 1 to 30 while the `y` axis indicates the number of `exec()`. Each graph presents two curves:

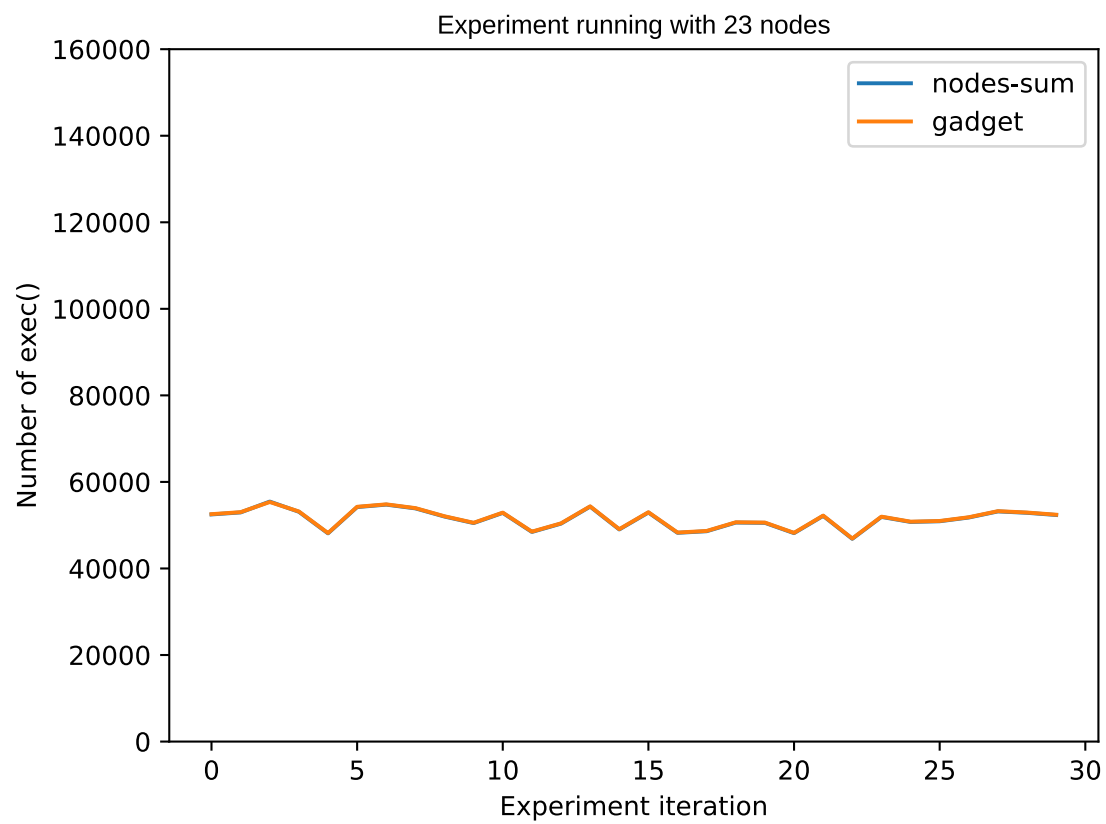
1. One which is the sum of all `exec()` generated for all nodes.
2. The other which is the number of `exec()` reported by Inspektor Gadget.

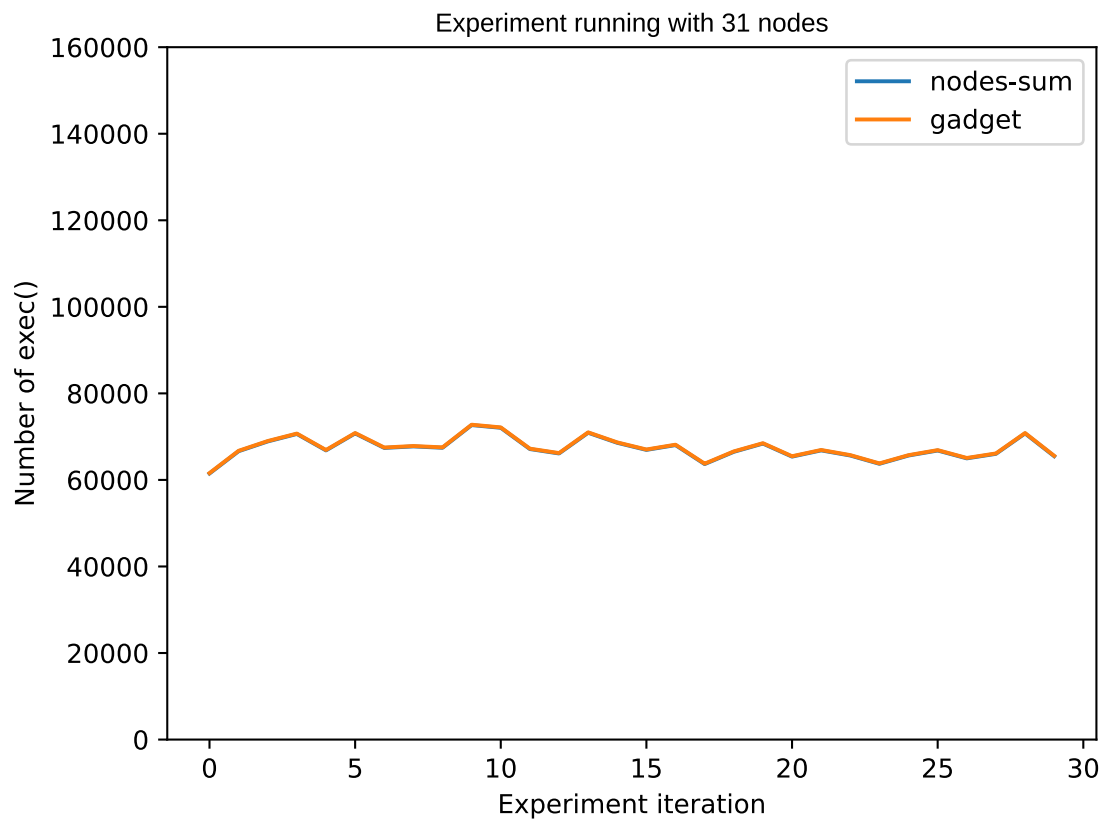


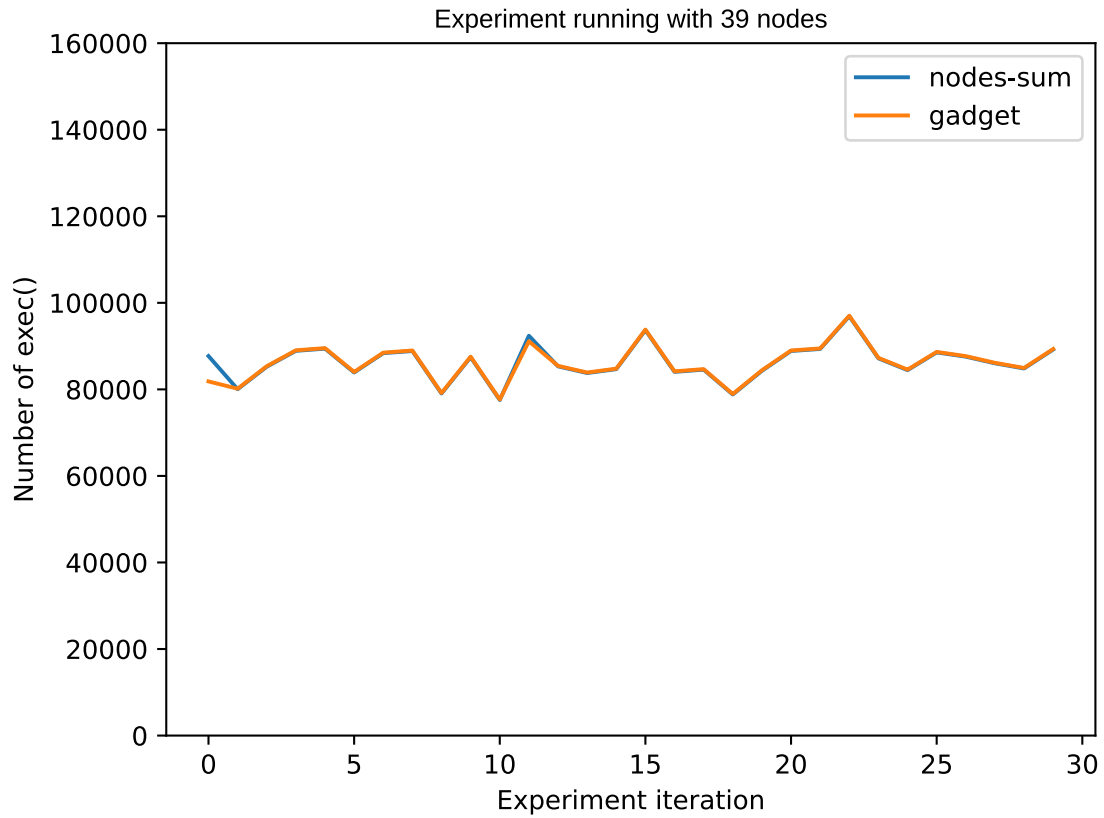










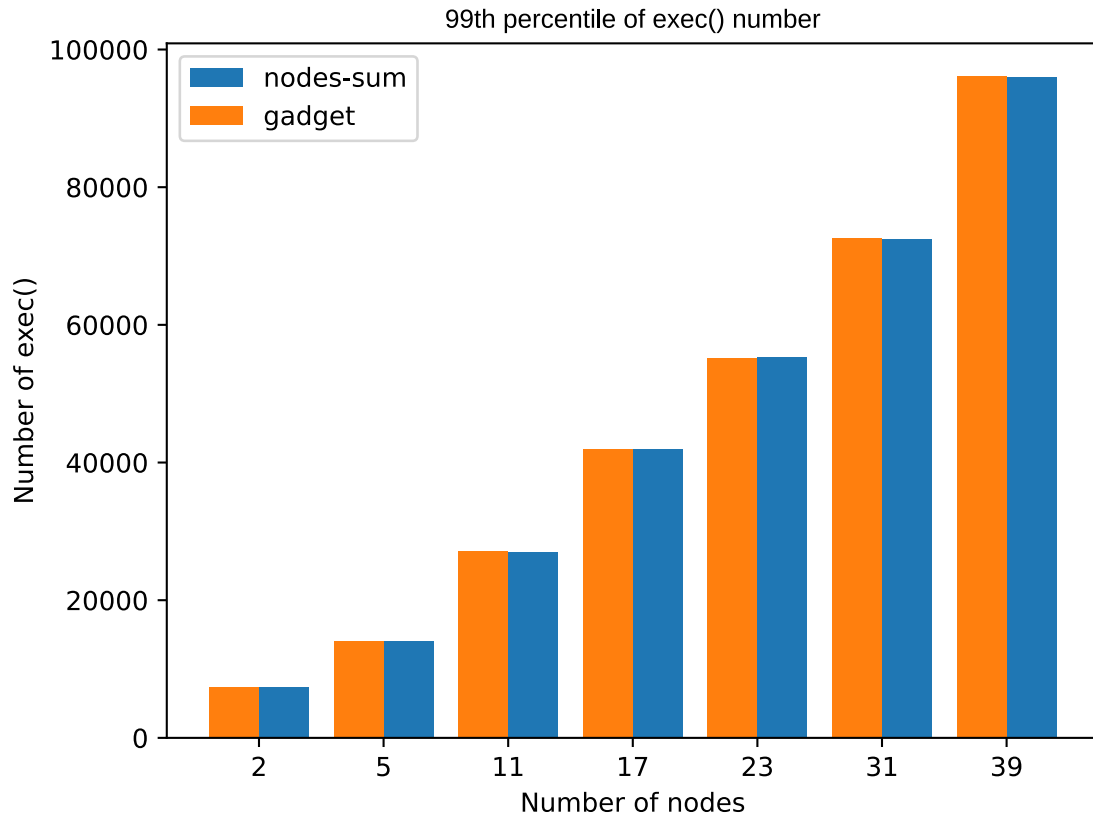


1.3 Interpretation

First of all, the curves are quite flat, so we can conclude there are not so much variation across the iterations.

The number of events reported by Inspektor Gadget follows the number of `exec()` generated.

Let's compute the 99th percentile for all number of nodes:



With the 99th percentile, we can clearly see Inspektor Gadget scales!

1.4 Conclusion

The usage of `grpc` over `exec gadgetttracermanager` makes Inspektor Gadget scales.