

Short reference for DADO CSV dataset

Short explanation of the CSV files

The DADO framework has inputs that include:

- The network topology as a graph.
 - It contains the nodes of the network, whether the node is a host or a computing resource and its characteristics such as available RAM or CPU clock speed.
 - It also contains the links that join the nodes, as well as their characteristics (latency, capacity, etc.).
- A specification of microservices. Shortly, this is simply a declaration of the IDs of the different microservices that can be used and their characteristics, such as cycles, required RAM, input and output. It is done separately so it is reusable.
- A specification of the workflows. This includes the microservices required by the workflow and which host requests it.

Each of those is a single "scenario" file (that you can trace back to a set of latency, host load, link load, response time, TCAM usage and optimization time reports in the results ZIP). In this dataset, each scenario file is divided into five CSV files:

- `ComputingNodes.csv`, including the specifications of all the computing nodes.
- `Switches.csv`, including the specifications of all the switches.
- `Links.csv`, including the specifications of all the links.
- `Microservices.csv`, including the specifications of all the microservices.
- `Workflows.csv`, including the specifications of all the workflows.

Name format

DADO's files, both results and the CSV files from the scenarios, have the following name convention:

- MEC<Number of IIoT nodes>iiot<Number of fog nodes>fog<Number of SDN controllers>controllers<Number of workflows per device>wfpd<Length of the workflows>len<Microservices cycles (HI/MED/LO)>pw<Hardware ID used>hw<Additional info on the file>.csv

The hardware IDs are as follows:

Hardware ID	Hardware kind
0	Non-computing
1	Arduino
2	Raspberry Pi

Moreover, the sizes of the topologies are:

IIoT nodes	Fog nodes	Topology size
10	10	Small
25	15	Medium
50	25	Large

And the microservice cycles are as follows:

Microservice power ID	MCycles
LO	100
MED	500
HI	1000

Finally, the additional info suffixes are the following:

Suffix	File kind
_lat	Latency report
_host_ld	Host load report
_lnk_ld	Link load report
_resp_time	Response time report
_tcam	TCAM usage report
_time	Optimization time report
ComputingNodes	Computing nodes specification

Suffix	File kind
Switches	Switches specification
Links	Links specification
Microservices	Microservices specification
Workflows	Workflows specification

For instance, the computing nodes of the scenario with:

- Small topology (10 IIoT nodes, 10 fog nodes).
- 1 SDN controller.
- 1 workflow per device.
- 1 microservice per workflow
- 1000 MCycles.
- Non-computing hardware.

Are defined in
`MEC10iiot10fog1controllers1wfpd1lenHIpw0hwComputingNodes.csv`.

CSV files' columns

Computing nodes

Column	Description
id	ID of the computing node
power	Clock speed of the computing node (MHz)
memory	RAM of the computing node (MB)

Switches

Column	Description
id	ID of the computing node

Links

Column	Description
source	ID of the node that is the source of the link
destination	ID of the node that is the destination of the link
latency	Latency of the link (s)
capacity	Capacity of the link (MB)

Microservices

Column	Description
id	ID of the microservice
cycles	Execution cycles of the microservice (MCycles)
input	Input size of the microservice (MB)
output	Output size of the microservice (MB)
memory	RAM required by the microservice (MB)

Workflows

Column	Description
id	ID of the workflow
chain	List of the IDs of the microservices requested in the workflow. They are requested in the same order as shown in this column
starter	ID of the computing node requesting the workflow
response	Whether the workflow should have a response (always true)