

Resources monitoring

Metrics

- CPU used percentage - informs about percentage core usage over time interval (in this implementation interval is 1s, which is minimum value) (includes user mode ticks and kernel mode ticks associated to monitored device)
- Involuntary context switches - informs about involuntary context switches over time interval, which means process was running too long without making blocking system call (more involuntary context switches - higher cpu usage by the process)
- Memory usage percentage - informs about ratio of resident set size occupied by process to total physical memory available on the machine (resident set size occupied by process -> RAM reserved by process)
- More information <https://github.com/AliceO2Group/Monitoring#getting-started>

Example metric logs

- [29558:internal-dpl-aod-reader]: [METRIC] cpuUsedPercentage 40.490000
1587546616855 hostname=milosz-VirtualBox,name=o2-analysis-tutorial-histograms,dataprocessor_id=internal-dpl-aod-reader
- [29558:internal-dpl-aod-reader]: [METRIC] involuntaryContextSwitches 20
1587546616855 hostname=milosz-VirtualBox,name=o2-analysis-tutorial-histograms,dataprocessor_id=internal-dpl-aod-reader
- [29558:internal-dpl-aod-reader]: [METRIC] memoryUsagePercentage
9.128852 1587546616855 hostname=milosz-VirtualBox,name=o2-analysis-tutorial-histograms,dataprocessor_id=internal-dpl-aod-reader
- PID and name of monitored device is always printed before each metric

Monitoring library issue

- In the version 2.6.6 there is a issue with printing metrics, a lot of data is not printed at all. Using the newest version of library eliminates this issue.
- Issue is caused (probably) by too long string streams
- Maybe it is a virtual machine issue

Implementation

Steps

- add new execution parameter (`--resource-monitoring`)
- save value of option to `driverInfo`
- set value in each prepared device
- propagate execution parameter to forked processes
- enable monitoring service in every FairMQ device (if parameter provided)

- Possible refactoring - method `dataProcessorSpecs2DeviceSpecs` gets a lot of data from `DriverInfo`, maybe just pass object by reference

<https://github.com/Kavaldrin/AliceO2/tree/resources-monitoring>