

CLAIMS

1. A method for job execution, the method comprising:
performing by a processing unit of a group of processing units of a system, while avoiding interrupting a controller that does not belong to the group, at least one iteration of the steps of: (a) entering a trusted mode, (b) selecting a selected job to be executed by the processing unit, (c) retrieving access control metadata related to the selected job, (d) entering, by the processing unit, an untrusted mode, (e) executing the selected job by the processing unit while adhering to the access control metadata related to the job, and (f) resetting the processing unit.
2. The method according to claim 1, comprising performing multiple iterations of steps (a) – (f), wherein at least a majority of the iterations are executed without interrupting the controller.
3. The method according to claim 1 or 2, wherein entering the trusted mode is executed during a boot process following the resetting of the processing unit.
4. The method according to any of claims 1-3, comprising executing, by the processing unit, the multiple iterations without intervention of the controller.
5. The method according to any of claims 1-4, comprising reporting a completion of the selected job.
6. The method according to any of claims 1-5, comprising allocating, by the processing unit, an allocated job to another processing unit of the group; wherein the allocating comprises updating, by the processing unit and while in the trusted mode, metadata related to an execution of the allocated job.
7. The method according to claim 6, wherein updating the metadata comprises updating a queue pointer, using an atomic command execution unit.
8. The method according to claim 6 or 7, wherein updating the metadata precedes resetting the processing unit.
9. The method according to any of claims 6-7, wherein updating the metadata follows resetting the processing unit.

10. The method according to any of claims 1-9, wherein selecting the selected job comprises selecting the selected job from one of multiple job queues.
11. The method according to claim 10, wherein the group of processing units comprise different types of processing unit and are arranged in clusters; and wherein the multiple job queues comprise queues allocated per processing unit, queues allocated per type of the processing units, and queues allocated per cluster.
12. The method according to claim 11, wherein processing units of a cluster of the clusters comprise general purpose processing units.
13. The method according to any of claims 11-12, wherein processing units of a cluster of the clusters comprise hardware accelerators.
14. The method according to any of claims 1-13 comprising determining, by the processing unit, whether to retrieve the access control metadata related to the selected job, and retrieving access control metadata related to the selected job only when determining to retrieve the access control metadata related to the selected job.
15. The method according to any of claims 1-14, comprising storing state metadata indicative of a process that comprises a last job previously executed by the processing unit; and wherein the selecting of the selected job is followed by determining whether the selected job belongs to the process; wherein when the selected job belongs to the process then avoiding the retrieval of the access control metadata related to the selected job.
16. The method according to any of claims 1-15, comprising:
 - retrieving, by the processing unit and while in the trusted mode, a command originated from the controller; and
 - executing the commands by the processing unit.
17. A processing unit, the processing unit one of a group of processing units of a system, the processing unit comprising:
 - a processor; and
 - memory including instructions, which when executed by the processor while avoiding interrupting a controller that does not belong to the group of processing units, cause the processor to:
 - perform at least one iteration of the steps of: (a) entering a trusted mode, (b) selecting a selected job to be executed by the processing unit, (c) retrieving access

control metadata related to the selected job, (d) entering, by the processing unit, an untrusted mode, (e) executing the selected job by the processing unit while adhering to the access control metadata related to the job, and (f) resetting the processing unit.

18. The processing unit according to claim 17, wherein the instructions cause the processor to perform multiple iterations of steps (a) – (f), wherein at least a majority of the iterations are executed without interrupting the controller.

19. The processing unit according to claim 17 or 18, wherein entering the trusted mode is executed during a boot process following the resetting of the processing unit.

20. The processing unit according to any of claims 17-19, wherein the instructions cause the processor to execute, by the processing unit, the multiple iterations without intervention of the controller.

21. The processing unit according to any of claims 17-20, wherein the instructions cause the processor to report a completion of the selected job.

22. The processing unit according to any of claims 17-21, wherein the instructions cause the processor to allocate, by the processing unit, an allocated job to another processing unit of the group; wherein the allocating comprises updating, by the processing unit and while in the trusted mode, metadata related to an execution of the allocated job.

23. The processing unit according to claim 22, wherein updating the metadata comprises updating a queue pointer, using an atomic command execution unit.

24. The processing unit according to claim 22 or 23, wherein updating the metadata precedes resetting the processing unit.

~~25. An apparatus for job execution, the apparatus comprising:
 — means for performing by a processing unit of a group of processing units of a system, while avoiding interrupting a controller that does not belong to the group, at least one iteration of the steps of: (a) entering a trusted mode, (b) selecting a selected job to be executed by the processing unit, (c) retrieving access control metadata related to the selected job, (d) entering, by the processing unit, an untrusted mode, (e) executing the selected job by the processing unit while adhering to the access control metadata related to the job, and (f) resetting the processing unit.~~