

TEMU

Machine Class Manual

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Table 1. Record of Changes

Rev	Date	Author	Note
1.1	2016-05-12	MH	Auto gen tables.
1.0	2015-07-01	MH	Initial version.

1. Introduction

The machine class is used to assemble and group related processors in machines. The machine class is intended to be used for SMP and multi-core systems. It provides the following capabilities:

1. A multi-CPU scheduler that executes all the CPUs in the machine in sequence (for a fixed time quanta).
2. A synchronised event queue. CPUs can post events in the next time quanta to be executed after all the processors have reached a specific time point.
3. A scheduling interface enabling the machine to be run for a time specified in seconds, not cycles.

Note that the machine class supports the scheduling of different CPUs with different clock frequencies.

Synchronised events are posted on a CPUs event queue by adding the flag `TEMU_EVENT_SYNC` to the posting function, this will bypass the CPU event queue and put it in the machine object's queue.

2. Attributes

2.1. Properties

Name	Type	Description
cpus	irefarray	Processors in the machine
currentCPU	iref	Current CPU
currentCPUIdx	int32_t	Current CPU Index
devices	irefarray	Devices to reset when machine is reset
object.timeSource	object	Time source object (a cpu or machine object)
quanta	uint64_t	Quanta length in nanoseconds
quantaEnd	uint64_t	End point of current quanta in nanoseconds
quantaStart	uint64_t	Quanta start in nanoseconds
syncMask	uint64_t	Synchronised CPU mask

2.2. Interfaces

Name	Type	Description
EventIface	EventIface	
LegacyIface	LegacyIface	
MachineIface	MachineIface	
ObjectIface	ObjectIface	

2.3. Ports

Prop	Iface	Description
-	-	-

3. Limitations

- The machine class cannot have more than 64 CPU cores connected.