

# 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.