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PUBLIC

T-EMU: Machine Class Manual

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Record of Changes

Author	Description	Rev	Date
Mattias Holm	Initial Version	1.0	2015-07-01

Table of Contents

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. Configuration

Table 1. Machine Properties

Property	Type	Purpose
quanta	uint64_t	Length of time quanta in nanoseconds
syncMask	uint64_t	Considered when checking whether the CPUs are synced
cpus	CpuIface Object Array	For controlling CPUs
devices	EventIface Object Array	For distributing machine resets

3. Limitations

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