USER MANUAL

Nomadik Multiprocessing Framework

Execution Engine Scheduling Model

NMF version 1.8 and more

April 2009

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Chapter 1

Design guides

1.1 Situation that break re-entrancy

1.1.1 Multiple synchronous call

When two client components could make synchronous call to one server component, you must take care about not breaking re-entrancy since no synchronization is insert during synchronous call.

By two components running at different priorities

When deploying arhitecture found in Figure 1.1 and if such sequence occure:

1. `Client A` component is scheduled.
2. `Client A` component call synchronously `Server` component without been exit from it.
3. An event is posting to `Client B` (for example by an interrupt handler).
4. `Client B` which is more prioritized start its execution and preempte `Client A`.
5. `Client B` component call synchronously `Server` component driving to re-enter in it.

This will break re-entrancy of `Server` component.

Nevertheless, this construction is allowed if `Server` component is a state-less component (no writable global variable).

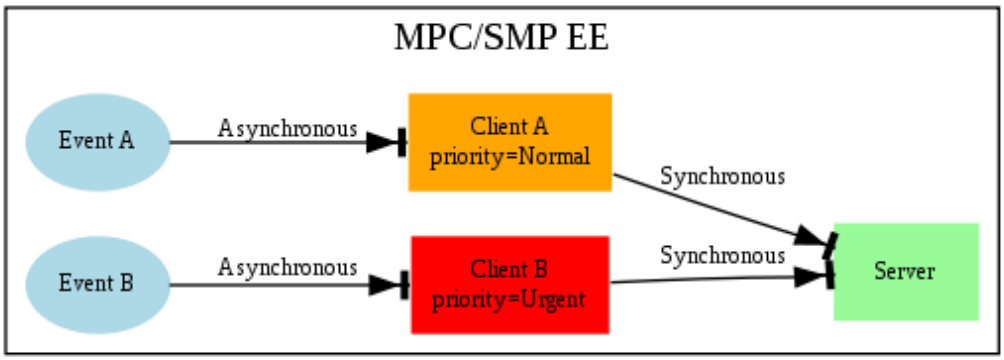

Figure 1.1: Re-entrancy on synchronous call by two components running at different priority

By two components running at same priority in SMP EE

When deploying arhitecture found in Figure 1.2 and if such sequence occure:

1. `Client A` component is scheduled by first core.
2. `Client A` component call synchronously `Server` component without been exit from it.
3. `Client B` component is scheduled by second core.
4. `Client B` component call synchronously `Server` component driving to re-enter in it.

This will break re-entrancy of `Server` component.

Nevertheless, this construction is allowed if `Server` component is a state-less component (no writable global variable).

1.2 Situation that break Real-time

1.2.1 Infinite loop in component

1.2.2 Call of blocking IO in component in SMP EE

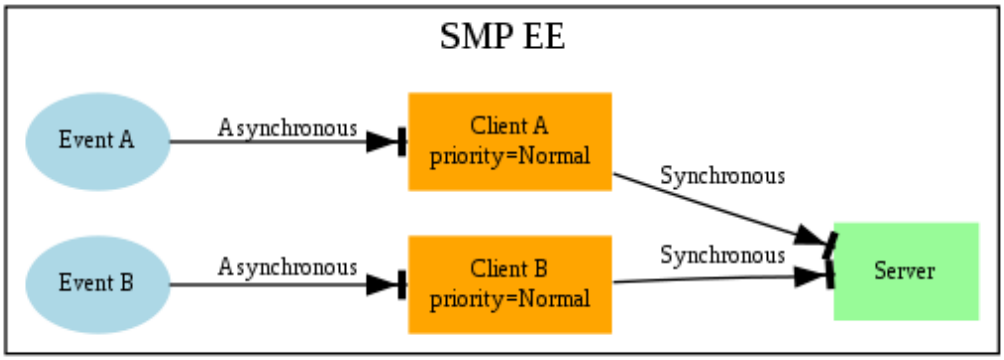

Figure 1.2: Re-entrancy on synchronous call by two components running at same priority on SMP EE

Figure 1.3: Infinite loop in component

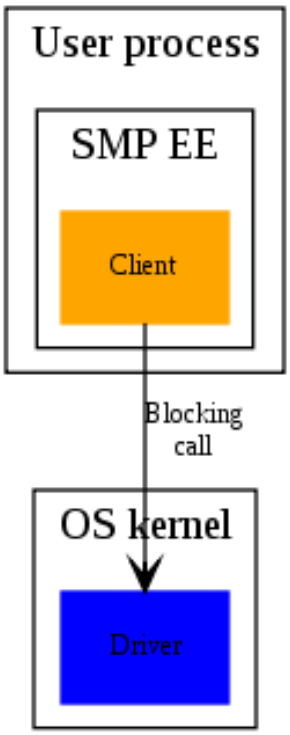

Figure 1.4: Call of blocking IO in component

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