Boot time memory management

Early system initialization cannot use "normal" memory management simply because it is not set up yet. But there is still need to allocate memory for various data structures, for instance for the physical page allocator.

A specialized allocator called `memblock` performs the boot time memory management. The architecture specific initialization must set it up in :c:func:`setup_arch` and tear it down in :c:func:`mem_init` functions.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\core-api\(linux-master)(Documentation)(core-api)boot-time-mm.rst, line 10); *backlink*

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\core-api\(linux-master)(Documentation)(core-api)boot-time-mm.rst, line 10); *backlink*

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Once the early memory management is available it offers a variety of functions and macros for memory allocations. The allocation request may be directed to the first (and probably the only) node or to a particular node in a NUMA system. There are API variants that panic when an allocation fails and those that don't.

Memblock also offers a variety of APIs that control its own behaviour.

Memblock Overview

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\core-api\(linux-master)(Documentation)(core-api)boot-time-mm.rst, line 26)

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```
.. kernel-doc:: mm/memblock.c
   :doc: memblock overview
```

Functions and structures

Here is the description of memblock data structures, functions and macros. Some of them are actually internal, but since they are documented it would be silly to omit them. Besides, reading the descriptions for the internal functions can help to understand what really happens under the hood.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\core-api\(linux-master)(Documentation)(core-api)boot-time-mm.rst, line 39)

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```
.. kernel-doc:: include/linux/memblock.h
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\linux-master\Documentation\core-api\(linux-master)(Documentation)(core-api)boot-time-mm.rst, line 40)

Unknown directive type "kernel-doc".

```
.. kernel-doc:: mm/memblock.c
   :functions:
```