

## reserve system memory, ioremap()?



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Is it bad to call `ioremap()` on system DRAM. I would like to reserve a space in system DRAM that will not be used by any other process. Would this be the way to do it? I know that DRAM is not actually IO memory so I wasn't sure if this was considered bad practice.

linux-kernel linux-device-driver ioremap

edited Apr 8 at 0:27



sawdust

7,371 ● 15 ● 32

asked Nov 11 '14 at 16:40



whh4000

167 ● 1 ● 1 ● 16

To reserve a space in system RAM, use `kmalloc()`, `vmalloc()`, `get_free_pages()` etc. – CL Nov 12 '14 at 9:07

I need to identify the physical address that I would like to reserve in the same way I would using `ioremap`. My device is an SOC with multiple cores and I am trying to setup a region of shared DDR memory that will not be encroached on by the kernel. – whh4000 Nov 12 '14 at 12:47

What do you need the physical address for? – CL Nov 12 '14 at 13:30

Other cores on the SOC will be writing to this Address space. I will use it to pass large chunks of data between cores. The other cores will be hard coded to use a certain section of DRAM, the core running linux needs to identify it as a space that is not useable by the kernel. – whh4000 Nov 12 '14 at 16:26

You could try allocating it with `dma_alloc_coherent()`, get the physical address of the allocation, and pass that address to the other cores. Memory mapped non-cached as io memory will be slower, perhaps you don't want that. – TrentP Mar 31 at 6:42

## 2 Answers

Is it bad to call `ioremap()` on system DRAM.

System memory that is managed by the kernel should not also be remapped using `ioremap()`. These multiple mappings can cause data corruption on some architectures/processors. Refer to [this article](#) on this issue for ARM.

You could try to ensure a single mapping (using `ioremap()`) by excluding the memory region in question at boot time from the kernel's management.

On ARM specify the reduced physical memory using ATAGs (the `ATAG_MEM` tag(s)) or the Device Tree (the `memory` property).

Otherwise use the `memmap=` kernel parameter in the kernel command line:

```
1835 memmap=nn[KMG]$ss[KMG]
1836 [KNL,ACPI] Mark specific memory as reserved.
1837 Region of memory to be reserved is from ss to ss+nn.
1838 Example: Exclude memory from 0x18690000-0x1869ffff
1839 memmap=64K$0x18690000
1840 or
1841 memmap=0x10000$0x18690000
```

The memory region should also be declared through `request_mem_region()` to prevent multiple requests and for completeness/accuracy of `/proc/iomem`.

edited Mar 31 at 22:17

answered Nov 12 '14 at 23:59



sawdust

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Memory can be reserved during system boot time by using "mem" in the kernel command line argument.

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For example, if you have 256 MB, the argument mem=255M keeps the kernel from using the top megabyte. Your module could later use the following code to gain access to such memory:

```
dmabuf = ioremap (0xFF00000 /* 255M /, 0x100000 /* 1M */);
```

However this is not efficient way of doing it since the kernel cannot use this reserved memory. On the SoC I'm currently working, memory is reserved using Contiguous Memory Allocator(CMA) which allows memory to be reused by other processes when the SoC drivers are not using this memory.

edited Jan 22 '15 at 14:39

answered Dec 25 '14 at 15:12



M.D

18 ● 4