

# [PATCH 1/1] asm-generic: add node\_to\_cpumask\_ptr macro

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*Source:* <http://linux.derkeiler.com/Mailing-Lists/Kernel/2008-03/msg12048.html>

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  - *Date:* Mon, 31 Mar 2008 08:41:55 -0700
- 

Create a simple macro to always return a pointer to the node\_to\_cpumask(node) value. This relies on compiler optimization to remove the extra indirection:

```
#define node_to_cpumask_ptr(v, node) \  
cpumask_t_##v = node_to_cpumask(node), *v = &_##v
```

For those systems with a large cpumask size, then a true pointer to the array element can be used:

```
#define node_to_cpumask_ptr(v, node) \  
cpumask_t *v = &(node_to_cpumask_map[node])
```

A node\_to\_cpumask\_ptr\_next() macro is provided to access another node\_to\_cpumask value.

The other change is to always include asm-generic/topology.h moving the ifdef CONFIG\_NUMA to this same file.

Note: there are no references to either of these new macros in this patch, only the definition.

Based on 2.6.25-rc5-mm1

```
# alpha  
Cc: Richard Henderson <rth@xxxxxxxxxxx>
```

```
# fujitsu  
Cc: David Howells <dhowells@xxxxxxxxxxx>
```

```
# ia64  
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```

```
# powerpc  
Cc: Paul Mackerras <paulus@xxxxxxxxxxx>  
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```

```
# sparc
```

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---  
include/asm-alpha/topology.h | 3 +---  
include/asm-frv/topology.h | 4 +---  
include/asm-generic/topology.h | 14 ++++++  
include/asm-ia64/topology.h | 5 +++++  
include/asm-powerpc/topology.h | 3 +---  
include/asm-x86/topology.h | 15 ++++++  
6 files changed, 35 insertions(+), 9 deletions(-)

--- linux-2.6.25-rc5.orig/include/asm-alpha/topology.h  
+++ linux-2.6.25-rc5/include/asm-alpha/topology.h  
@@ -41,8 +41,7 @@ static inline cpumask\_t node\_to\_cpumask(  
#define pcibus\_to\_cpumask(bus) (cpu\_online\_map)

---#else /\* CONFIG\_NUMA \*/  
---# include <asm-generic/topology.h>  
---#endif /\* !CONFIG\_NUMA \*/  
+++# include <asm-generic/topology.h>

---#endif /\* \_ASM\_ALPHA\_TOPOLOGY\_H \*/  
--- linux-2.6.25-rc5.orig/include/asm-frv/topology.h  
+++ linux-2.6.25-rc5/include/asm-frv/topology.h  
@@ -5,10 +5,8 @@

#error NUMA not supported yet

---#else /\* !CONFIG\_NUMA \*/  
+++#endif /\* CONFIG\_NUMA \*/

#include <asm-generic/topology.h>

---#endif /\* CONFIG\_NUMA \*/

---#endif /\* \_ASM\_TOPOLOGY\_H \*/  
--- linux-2.6.25-rc5.orig/include/asm-generic/topology.h  
+++ linux-2.6.25-rc5/include/asm-generic/topology.h  
@@ -27,6 +27,8 @@  
#ifndef \_ASM\_GENERIC\_TOPOLOGY\_H  
#define \_ASM\_GENERIC\_TOPOLOGY\_H

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```
+#ifndef CONFIG_NUMA
+
/* Other architectures wishing to use this simple topology API should fill
in the below functions as appropriate in their own <asm/topology.h> file. */
#ifndef cpu_to_node
@@ -52,4 +54,16 @@
)
#endif

+#endif /* CONFIG_NUMA */
+
+/* returns pointer to cpumask for specified node */
+#ifndef node_to_cpumask_ptr
+
+#define node_to_cpumask_ptr(v, node) \
+ cpumask_t_##v = node_to_cpumask(node), *v = &_##v
+
+#define node_to_cpumask_ptr_next(v, node) \
+ _##v = node_to_cpumask(node)
+#endif
+
+#endif /* _ASM_GENERIC_TOPOLOGY_H */
--- linux-2.6.25-rc5.orig/include/asm-ia64/topology.h
+++ linux-2.6.25-rc5/include/asm-ia64/topology.h
@@ -116,6 +116,11 @@ void build_cpu_to_node_map(void);
#define smt_capable() (smp_num_siblings > 1)
#endif

+#define pcibus_to_cpumask(bus) (pcibus_to_node(bus) == -1 ? \
+ CPU_MASK_ALL : \
+ node_to_cpumask(pcibus_to_node(bus)) \
+ )
+
#include <asm-generic/topology.h>

+#endif /* _ASM_IA64_TOPOLOGY_H */
--- linux-2.6.25-rc5.orig/include/asm-powerpc/topology.h
+++ linux-2.6.25-rc5/include/asm-powerpc/topology.h
@@ -96,11 +96,10 @@ static inline void sysfs_remove_device_f
{
}

+#endif /* CONFIG_NUMA */

#include <asm-generic/topology.h>

-#endif /* CONFIG_NUMA */
-
#ifdef CONFIG_SMP
#include <asm/cputable.h>
#define smt_capable() (cpu_has_feature(CPU_FTR_SMT))
```

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```
--- linux-2.6.25-rc5.orig/include/asm-x86/topology.h
+++ linux-2.6.25-rc5/include/asm-x86/topology.h
@@ -81,6 +81,17 @@ static inline int cpu_to_node(int cpu)
else
return NUMA_NO_NODE;
}
+
+
+#ifdef CONFIG_NUMA
+
+
+/* Returns a pointer to the cpumask of CPUs on Node 'node'. */
+#define node_to_cpumask_ptr(v, node) \
+ cpumask_t *v = &(node_to_cpumask_map[node])
+
+#define node_to_cpumask_ptr_next(v, node) \
+ v = &(node_to_cpumask_map[node])
+#endif
+
+#endif /* CONFIG_X86_64 */

/*
@@ -167,10 +178,10 @@ extern int __node_distance(int, int);

#else /* CONFIG_NUMA */

#include <asm-generic/topology.h>
-
-
#endif

#include <asm-generic/topology.h>
+
extern cpumask_t cpu_coregroup_map(int cpu);

#ifdef ENABLE_TOPO_DEFINES
```

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