Subject: Re: [PATCH 6/6] BC: kernel memory accounting (marks)
Posted by Dave Hansen on Wed, 23 Aug 2006 23:03:51 GMT
View Forum Message <> Reply to Message

On Wed, 2006-08-23 at 15:08 +0400, Kirill Korotaev wrote:
> include/asm-i386/thread_info.h | 4 ++--
> include/asm-ia64/pgalloc.h | 24 ++++++++++++++++++-------
> include/asm-x86_64/pgalloc.h | 12 ++++++++----
> include/asm-x86_64/thread_info.h | 5 +++--

Do you think we need to cover a few more architectures before
considering merging this, or should we just fix them up as we need them?

I'm working on a patch to unify as many of the alloc_thread_info()
functions as I can. That should at least give you one place to modify
and track the thread_info allocations. I've only compiled for x86_64
and i386, but I'm working on more. A preliminary version is attached.

-- Dave

---

clean-dave/include/asm-alpha/thread_info.h | 5 ---
clean-dave/include/asm-frv/thread_info.h | 17 ----------
clean-dave/include/asm-h8300/thread_info.h | 8 +----
clean-dave/include/asm-i386/thread_info.h | 18 ----------
clean-dave/include/asm-m32r/thread_info.h | 17 ----------
clean-dave/include/asm-m68k/thread_info.h | 9 -----
clean-dave/include/asm-powerpc/thread_info.h | 27 ----------
clean-dave/include/linux/thread_alloc.h | 42 ++
clean-dave/kernel/fork.c | 1
9 files changed, 47 insertions(+), 97 deletions(-)

diff -puN arch/arm/kernel/process.c~unify-alloc-thread-info arch/arm/kernel/process.c
diff -puN include/asm-alpha/thread_info.h~unify-alloc-thread-info include/asm-alpha/thread_info.h
--- clean/include/asm-alpha/thread_info.h~unify-alloc-thread-inf o 2006-08-23
15:38:37.000000000 -0700
+++ clean-dave/include/asm-alpha/thread_info.h 2006-08-23 15:40:23.000000000 -0700
@@ -50,10 +50,7 @@ register struct thread_info *__current_t
#define current_thread_info() __current_thread_info

/* Thread information allocation. */
-#define THREAD_SIZE (2*PAGE_SIZE)
-#define alloc_thread_info(tsk) \
- ((struct thread_info *) __get_free_pages(GFP_KERNEL,1))
-#define free_thread_info(ti) free_pages((unsigned long) (ti), 1)
+#define THREAD_SHIFT (PAGE_SHIFT+1)

```
 #endif /* __ASSEMBLY__ */

diff -puN include/asm-frv/thread_info.h~unify-alloc-thread-info include/asm-frv/thread_info.h
--- clean/include/asm-frv/thread_info.h~unify-alloc-thread-info 2006-08-23 15:40:26.000000000
-0700
+++ clean-dave/include/asm-frv/thread_info.h 2006-08-23 15:40:40.000000000 -0700
@@ -82,23 +82,6 @@ register struct thread_info *__current_t

 #define current_thread_info() ({ __current_thread_info; })

-/* thread information allocation */
-#ifdef CONFIG_DEBUG_STACK_USAGE
-#define alloc_thread_info(tsk)     \
- ({       \
-  struct thread_info *ret;   \
-        \
-  ret = kmalloc(THREAD_SIZE, GFP_KERNEL);  \
-  if (ret)     \
-   memset(ret, 0, THREAD_SIZE);  \
-  ret;      \
- })
-#else
-#define alloc_thread_info(tsk) kmalloc(THREAD_SIZE, GFP_KERNEL)
-#endif
-
-#define free_thread_info(info) kfree(info)
-
 #endif /* __ASSEMBLY__ */

 /*
diff -puN include/asm-h8300/thread_info.h~unify-alloc-thread-info
include/asm-h8300/thread_info.h
---  clean/include/asm-h8300/thread_info.h~unify-alloc-thread-inf o 2006-08-23
15:40:43.000000000 -0700
+++ clean-dave/include/asm-h8300/thread_info.h 2006-08-23 15:41:54.000000000 -0700
@@ -49,8 +49,8 @@ struct thread_info {
 /*
  * Size of kernel stack for each process. This must be a power of 2...
  */
-#define THREAD_SIZE  8192 /* 2 pages */
-
+#define THREAD_SHIFT 1
+#define THREAD_SIZE (1<<THREAD_SHIFT)

 /* how to get the thread information struct from C */
 static inline struct thread_info *current_thread_info(void)
@@ -65,10 +65,6 @@ static inline struct thread_info *curren
  return ti;
```

```
 }

-/* thread information allocation */
-#define alloc_thread_info(tsk) ((struct thread_info *) \
-    __get_free_pages(GFP_KERNEL, 1))
-#define free_thread_info(ti) free_pages((unsigned long) (ti), 1)
 #endif /* __ASSEMBLY__ */

 /*
diff -puN include/asm-i386/thread_info.h~unify-alloc-thread-info include/asm-i386/thread_info.h
---  clean/include/asm-i386/thread_info.h~unify-alloc-thread-info 2006-08-23 15:19:27.000000000
-0700
+++ clean-dave/include/asm-i386/thread_info.h 2006-08-23 15:33:30.000000000 -0700
@@ -92,24 +92,6 @@ static inline struct thread_info *curren
 {
  return (struct thread_info *)(current_stack_pointer & ~(THREAD_SIZE - 1));
 }
-
-/* thread information allocation */
-#ifdef CONFIG_DEBUG_STACK_USAGE
-#define alloc_thread_info(tsk)     \
- ({       \
-  struct thread_info *ret;   \
-        \
-  ret = kmalloc(THREAD_SIZE, GFP_KERNEL);  \
-  if (ret)     \
-   memset(ret, 0, THREAD_SIZE);  \
-  ret;      \
- })
-#else
-#define alloc_thread_info(tsk) kmalloc(THREAD_SIZE, GFP_KERNEL)
-#endif
-
-#define free_thread_info(info) kfree(info)
-
 #else /* !__ASSEMBLY__ */

 /* how to get the thread information struct from ASM */
diff -puN include/asm-ia64/thread_info.h~unify-alloc-thread-info include/asm-ia64/thread_info.h
diff -puN include/asm-m32r/thread_info.h~unify-alloc-thread-info include/asm-m32r/thread_info.h
---  clean/include/asm-m32r/thread_info.h~unify-alloc-thread-info 2006-08-23 15:44:38.000000000
-0700
+++ clean-dave/include/asm-m32r/thread_info.h 2006-08-23 15:44:51.000000000 -0700
@@ -94,23 +94,6 @@ static inline struct thread_info *curren
  return ti;
 }

-/* thread information allocation */
```

```
-#ifdef CONFIG_DEBUG_STACK_USAGE
-#define alloc_thread_info(tsk)     \
- ({       \
-  struct thread_info *ret;   \
-         \
-   ret = kmalloc(THREAD_SIZE, GFP_KERNEL);  \
-   if (ret)     \
-    memset(ret, 0, THREAD_SIZE);  \
-   ret;      \
-  })
-#else
-#define alloc_thread_info(tsk) kmalloc(THREAD_SIZE, GFP_KERNEL)
-#endif
-
-#define free_thread_info(info) kfree(info)
-
 #define TI_FLAG_FAULT_CODE_SHIFT 28

 static inline void set_thread_fault_code(unsigned int val)
diff -puN include/asm-m68k/thread_info.h~unify-alloc-thread-info include/asm-m68k/thread_info.h
---  clean/include/asm-m68k/thread_info.h~unify-alloc-thread-info 2006-08-23
15:44:52.000000000 -0700
+++ clean-dave/include/asm-m68k/thread_info.h 2006-08-23 15:45:32.000000000 -0700
@@ -24,14 +24,7 @@ struct thread_info {
  },     \
 }

-/* THREAD_SIZE should be 8k, so handle differently for 4k and 8k machines */
-#if PAGE_SHIFT == 13 /* 8k machines */
-#define alloc_thread_info(tsk)   ((struct thread_info *)__get_free_pages(GFP_KERNEL,0))
-#define free_thread_info(ti)  free_pages((unsigned long)(ti),0)
-#else /* otherwise assume 4k pages */
-#define alloc_thread_info(tsk)   ((struct thread_info *)__get_free_pages(GFP_KERNEL,1))
-#define free_thread_info(ti)  free_pages((unsigned long)(ti),1)
-#endif /* PAGE_SHIFT == 13 */
+#define THREAD_SHIFT 1

 #define init_thread_info (init_task.thread.info)
 #define init_stack  (init_thread_union.stack)
diff -puN include/asm-powerpc/thread_info.h~unify-alloc-thread-info
include/asm-powerpc/thread_info.h
---  clean/include/asm-powerpc/thread_info.h~unify-alloc-thread-i nfo 2006-08-07
12:21:11.000000000 -0700
+++ clean-dave/include/asm-powerpc/thread_info.h 2006-08-23 15:48:09.000000000 -0700
@@ -62,33 +62,6 @@ struct thread_info {
 #define init_thread_info (init_thread_union.thread_info)
 #define init_stack  (init_thread_union.stack)
```

```
-/* thread information allocation */
-
-#if THREAD_SHIFT >= PAGE_SHIFT
-
-#define THREAD_ORDER (THREAD_SHIFT - PAGE_SHIFT)
-
-#ifdef CONFIG_DEBUG_STACK_USAGE
-#define alloc_thread_info(tsk) \
- ((struct thread_info *)__get_free_pages(GFP_KERNEL | \
-  __GFP_ZERO, THREAD_ORDER))
-#else
-#define alloc_thread_info(tsk) \
- ((struct thread_info *)__get_free_pages(GFP_KERNEL, THREAD_ORDER))
-#endif
-#define free_thread_info(ti) free_pages((unsigned long)ti, THREAD_ORDER)
-
-#else /* THREAD_SHIFT < PAGE_SHIFT */
-
-#ifdef CONFIG_DEBUG_STACK_USAGE
-#define alloc_thread_info(tsk) kzalloc(THREAD_SIZE, GFP_KERNEL)
-#else
-#define alloc_thread_info(tsk) kmalloc(THREAD_SIZE, GFP_KERNEL)
-#endif
-#define free_thread_info(ti) kfree(ti)
-
-#endif /* THREAD_SHIFT < PAGE_SHIFT */
-
 /* how to get the thread information struct from C */
 static inline struct thread_info *current_thread_info(void)
 {
diff -puN /dev/null include/linux/thread_alloc.h
--- /dev/null 2005-03-30 22:36:15.000000000 -0800
+++ clean-dave/include/linux/thread_alloc.h 2006-08-23 16:00:41.000000000 -0700
@@ -0,0 +1,42 @@
+#ifndef _LINUX_THREAD_ALLOC
+#define _LINUX_THREAD_ALLOC
+
+#ifndef THREAD_SHIFT
+#define THREAD_SHIFT PAGE_SHIFT
+#endif
+#ifndef THREAD_ORDER
+#define THREAD_ORDER    (THREAD_SHIFT - PAGE_SHIFT)
+#endif
+
+struct thread_info;
+struct task;
+
+#if THREAD_SHIFT >= PAGE_SHIFT
```

```
+static inline struct thread_info *alloc_thread_info(struct task_struct *tsk)
+{
+ gfp_t flags = GFP_KERNEL;
+#ifdef CONFIG_DEBUG_STACK_USAGE
+ flags |= __GFP_ZERO;
+#endif
+ return (struct thread_info *)__get_free_pages(flags, THREAD_ORDER);
+}
+static inline void free_thread_info(struct thread_info *ti)
+{
+ free_pages((unsigned long)ti, THREAD_ORDER);
+}
+#else /* THREAD_SHIFT < PAGE_SHIFT */
+static inline struct thread_info *alloc_thread_info(struct task_struct *tsk)
+{
+#ifdef CONFIG_DEBUG_STACK_USAGE
+ return kzalloc(THREAD_SIZE, GFP_KERNEL);
+#else
+ return kmalloc(THREAD_SIZE, GFP_KERNEL);
+#endif
+}
+static inline void free_thread_info(struct thread_info *ti)
+{
+ kfree(ti);
+}
+#endif /* THREAD_SHIFT < PAGE_SHIFT */
+
+#endif /* _LINUX_THREAD_ALLOC */
diff -puN include/linux/thread_info.h~unify-alloc-thread-info include/linux/thread_info.h
diff -puN kernel/fork.c~unify-alloc-thread-info kernel/fork.c
--- clean/kernel/fork.c~unify-alloc-thread-info 2006-08-23 15:19:28.000000000 -0700
+++ clean-dave/kernel/fork.c 2006-08-23 15:47:35.000000000 -0700
@@ -45,6 +45,7 @@
 #include <linux/cn_proc.h>
 #include <linux/delayacct.h>
 #include <linux/taskstats_kern.h>
+#include <linux/thread_alloc.h>

 #include <asm/pgtable.h>
 #include <asm/pgalloc.h>
_
```