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# **Linux Nios2 Documentation**

**The kernel development community**

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## **LINUX ON THE NIOS II ARCHITECTURE**

This is a port of Linux to Nios II (nios2) processor.

In order to compile for Nios II, you need a version of GCC with support for the generic system call ABI. Please see this link for more information on how compiling and booting software for the Nios II platform: <http://www.rocketboards.org/foswiki/Documentation/NiosIILinuxUserManual>

For reference, please see the following link: <http://www.altera.com/literature/lit-nio2.jsp>

### **1.1 What is Nios II?**

Nios II is a 32-bit embedded-processor architecture designed specifically for the Altera family of FPGAs. In order to support Linux, Nios II needs to be configured with MMU and hardware multiplier enabled.

### **1.2 Nios II ABI**

Please refer to chapter “Application Binary Interface” in Nios II Processor Reference Handbook.



## FEATURE STATUS ON NIOS2 ARCHITECTURE

Subsystem	Feature	Kconfig	Status	Description
core	cBPF-JIT	HAVE_CBPF_JIT	TODO	architecture
core	eBPF-JIT	HAVE_EBPF_JIT	TODO	architecture
core	generic-idle-thread	GENERIC_SMP_IDLE_THREAD	TODO	architecture
core	jump-labels	HAVE_ARCH_JUMP_LABEL	TODO	architecture
core	thread-info-in-task	THREAD_INFO_IN_TASK	TODO	architecture
core	tracehook	HAVE_ARCH_TRACEHOOK	ok	architecture
debug	debug-vm-pgtable	ARCH_HAS_DEBUG_VM_PGTABLE	TODO	architecture
debug	gcov-profile-all	ARCH_HAS_GCOV_PROFILE_ALL	TODO	architecture
debug	KASAN	HAVE_ARCH_KASAN	TODO	architecture
debug	kcov	ARCH_HAS_KCOV	TODO	architecture
debug	kgdb	HAVE_ARCH_KGDB	ok	architecture
debug	kmemleak	HAVE_DEBUG_KMEMLEAK	TODO	architecture
debug	kprobes	HAVE_KPROBES	TODO	architecture
debug	kprobes-on-ftrace	HAVE_KPROBES_ON_FTRACE	TODO	architecture
debug	kretprobes	HAVE_KRETPROBES	TODO	architecture
debug	optprobes	HAVE_OPTPROBES	TODO	architecture
debug	stackprotector	HAVE_STACKPROTECTOR	TODO	architecture
debug	uprobes	ARCH_SUPPORTS_UPROBES	TODO	architecture
debug	user-ret-profiler	HAVE_USER_RETURN_NOTIFIER	TODO	architecture
io	dma-contiguous	HAVE_DMA_CONTIGUOUS	TODO	architecture
locking	cmpxchg-local	HAVE_CMPXCHG_LOCAL	TODO	architecture
locking	lockdep	LOCKDEP_SUPPORT	TODO	architecture
locking	queued-rwlocks	ARCH_USE_QUEUED_RWLOCKS	TODO	architecture
locking	queued-spinlocks	ARCH_USE_QUEUED_SPINLOCKS	TODO	architecture
perf	kprobes-event	HAVE_REGS_AND_STACK_ACCESS_API	TODO	architecture
perf	perf-regs	HAVE_PERF_REGS	TODO	architecture
perf	perf-stackdump	HAVE_PERF_USER_STACK_DUMP	TODO	architecture
sched	membarrier-sync-core	ARCH_HAS_MEMBARRIER_SYNC_CORE	TODO	architecture
sched	numa-balancing	ARCH_SUPPORTS_NUMA_BALANCING	—	architecture
seccomp	seccomp-filter	HAVE_ARCH_SECCOMP_FILTER	TODO	architecture
time	arch-tick-broadcast	ARCH_HAS_TICK_BROADCAST	TODO	architecture
time	clockevents	!LEGACY_TIMER_TICK	ok	architecture
time	context-tracking	HAVE_CONTEXT_TRACKING	TODO	architecture
time	irq-time-acct	HAVE_IRQ_TIME_ACCOUNTING	TODO	architecture
time	virt-cpuacct	HAVE_VIRT_CPU_ACCOUNTING	TODO	architecture

Table 1 - continued from p

Subsystem	Feature	Kconfig	Status	Desc
vm	batch-unmap-tlb-flush	ARCH_WANT_BATCHED_UNMAP_TLB_FLUSH	—	arch
vm	ELF-ASLR	ARCH_HAS_ELF_RANDOMIZE	TODO	arch
vm	huge-vmap	HAVE_ARCH_HUGE_VMAP	TODO	arch
vm	ioremap_prot	HAVE_IOREMAP_PROT	TODO	arch
vm	PG_uncached	ARCH_USES_PG_UNCACHED	TODO	arch
vm	pte_special	ARCH_HAS_PTE_SPECIAL	TODO	arch
vm	THP	HAVE_ARCH_TRANSPARENT_HUGEPAGE	—	arch