Electron Binary Interface

x86_64 Architecture Supplement

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1. Introduction

This document specifies the binary interface for Electron on the *x86_64* (a.k.a. *AMD64*, *x64*) processor architecture. It is a supplement to the machine-independent *Electron Generic Binary Interface* (*EGBI*) specification and fills in the gaps which the EGBI specification defines as *architecture-specific*.

1.1. General Architecture Information

On the x86_64, the type `natural_t` is defined as `int64_t` and `unatural_t` is defined as `uint64_t`, as this is a 64-bit architecture. As normal, the `%rsp` register is used as the stack pointer, and the stack grows downwards. 128 bytes above the stack pointer are known as the *red zone* – asynchronous signals shall leave this area untouched, and functions may put arbitrary data in the red zone.

Before a `call`, the stack must be aligned on a 16-byte boundary. After a function returns, the stack must return to the value it was before issuing the call; that is, the caller cleans up the stack.

Frame information and arguments are allocated on the normal stack marked by `%rsp`.

2. Calling Convention

This section describes architecture-specific details of the calling convention defined in *EGBI Section 3. Calling Convention*.

Calls are issued using the `call` instruction. The argument array which goes into the *argument-register* is allocated on the stack.

2.1. Registers

The register mappings are as follows:

- The *argument-register* is `%rsi`.
- The *this-register* is `%rdx`.
- The *count-register* is `%rcx`.
- The *frame-info-register* is `%rbp`.
- The *return-register* is `%rax`.