The internals of advanced interrupt handling techniques: Performance optimization of an embedded Linux network interface

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Abstract

Linux over the past few years has gained in popularity as the OS fit for embedded networking equipment. Its reliability, low cost and undisputed networking capabilities made it one of the most popular choices for the networking market. As access interfaces become faster and network applications more sophisticated, a lot of effort has been focused on the improvement of Linux networking performance. This paper analyzes the routing performance improvement of an embedded communications processor by endorsing advanced interrupt handling techniques. Even though these techniques are well known and are popular on a variety of networking hardware, their combination is not so often used. Moreover, their performance evaluation is poorly analyzed and documented. Even though the analysis is based on an embedded Linux system, these techniques are not hardware specific, and can be applied to a wide variety of networking systems.

Keywords: Linux; Embedded processor; Interrupt coalescing; NAPI; Performance optimization