CHIP CHAT

Dear Linux Magazine Reader,

A few years ago, the great epic battle of the IT industry was all about operating systems. MS-DOS versus OS/2, Windows verses Mac. Novell NetWare rode the wave of the *network operating system* for a while, until Microsoft punched back with Windows NT. The first couple of years I was in my editor's chair, it seemed like every month we were writing about some hyperbolic new FUD from Microsoft as it sought to bring down Linux.

All these operating systems still exist (except for NetWare, I guess), but the great epic struggle of one system versus another hardly commands the same attention it used to. Even the great iPhone versus Android struggle is increasingly looking like iPhone versus Samsung – not that Google isn't still an interested party, but it isn't so easy to separate the experience of the operating system from the phone itself. Microsoft even tried to buy its way into the smartphone standoff with a massive subsidy for Nokia, only to discover that its cherished Windows brand had absolutely no significance to the market.

The showdown of the operating systems has gotten pretty predictable in recent years, so many industry watchers have taken to observing the competition in smartphones and tablets. But for me, the more interesting market to watch in the next few years will be the chips. Although the processor industry might seem like business as usual on the surface, new forces acting in the background are creating pressure for change. Intel has a tighter grip on the PC industry than ever before, with its market share for x86-class chips rising steadily over competitor AMD. But the sales for conventional PCs is actually starting to decline. PC vendors like HP and Dell are struggling to redefine themselves in the falling market, and Intel needs to find ways to carry its dominance to other fields, lest it awaken to find itself the captain of a ghost ship.

Meanwhile, the new emphasis on gadgets has brought new emphasis to ARM-based processors from vendors such as Qualcomm and NVidia that populate the tablet and smartphone industries, creating an interesting competitive space with more dimensions than the one-on-one battle of Goliath Intel and middleweight contender AMD. Intel is fighting to establish a presence in the smartphone sphere, with a new generation of Atom System on a Chip (SoC) systems designed to compete with ARM-based products such as Qualcomm's Snapdragon.

The HPC market also adds new dimensions. Although Intel still dominates, the fast-evolving field has led to many additional considerations, such as an emphasis on low power usage and minimizing the cost per cycle for large numbers of processors. Graphics processors (a specialty of AMD) have gained importance in the HPC field for massive-scale number crunching, and the low-cost, low-power ARM chips are also starting to leave a mark in the power-conscious HPC industry.

I'm not sure who to cheer for in all this. In terms market competition and the climate for innovation, it would probably be better if Intel doesn't take over the whole world. What would be really good for everyone is a highly competitive environment, in which several processor companies (or at least more than two) each have a specialty and are all able to compete across a broad range of uses. Let's hope some contenders rise to the challenge, and they all fight each other to a tie.

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