



guest editor

BY Dan O'Dowd, Green Hills Software

Embedded Linux: With friends like these, who needs enemies?

Embedded Linux is the most hyped embedded operating system ever. It is promoted as inexpensive, high quality, high productivity, reliable, widely available, and well supported. It is none of these things, as two of its greatest proponents have recently pointed out. Wind River Systems and MontaVista Software, companies that each describe themselves as “the leader” in embedded Linux, have both initiated marketing campaigns touting the horrors of using embedded Linux.

In the January/February 2008 issue of *Military Embedded Systems*, Jim Ready, the founder and chief technology officer of MontaVista, says “a [develop-it-yourself] embedded Linux distribution [is] a significant investment (read ‘big bucks’) in time and money.” He estimates the three-year cost of a large scale embedded Linux deployment at \$19,623,750. Here are some other quotes from the article:

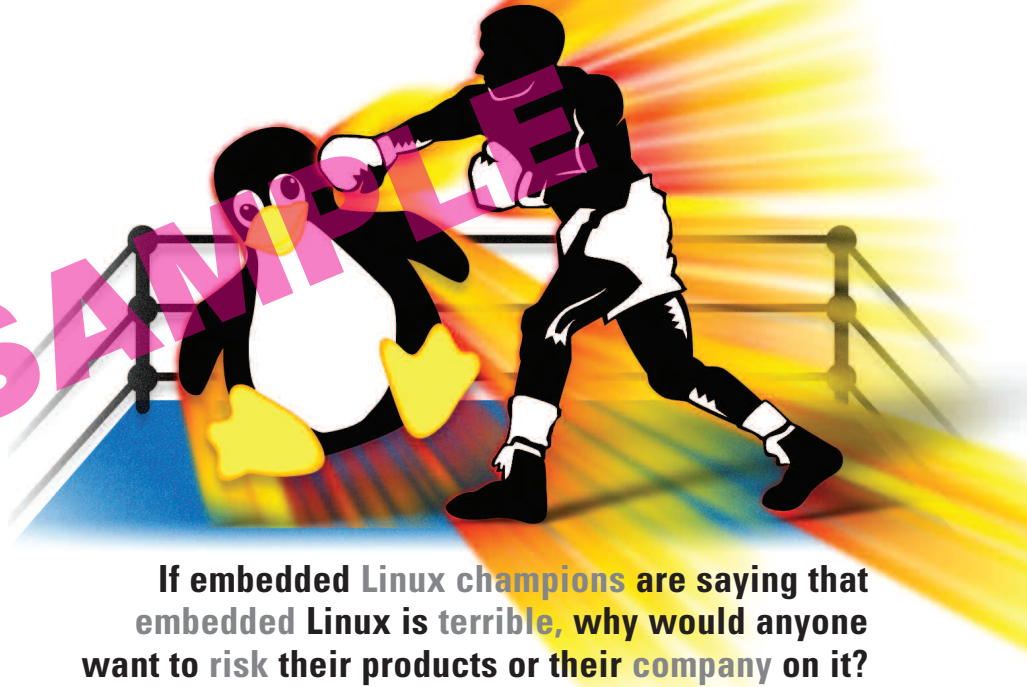
“To keep abreast of the changes occurring on a daily basis a developer needs to monitor the email traffic of 11 different and unsynchronized open source projects... up to 5,000 messages a day with 1,000 of these being

patches that need to be evaluated and possibly applied to the source base. Simply ignoring the traffic, figuring that the system in use seems to be working well enough, can lead to disastrous consequences later.

“A recent security patch that took

all of 13 lines of code to implement against an embedded Linux system would have taken more than 800k lines of source patches to implement, if the previous trail of patches had been ignored. It’s a classic case of pay now or really pay later.

“If there ever were a situation where the ‘software money pit’ could really take hold, it’s in owning 30 million lines of constantly changing source code. Even in the simplest case, the development costs are typically in the millions of dollars.”



If embedded Linux champions are saying that embedded Linux is terrible, why would anyone want to risk their products or their company on it?



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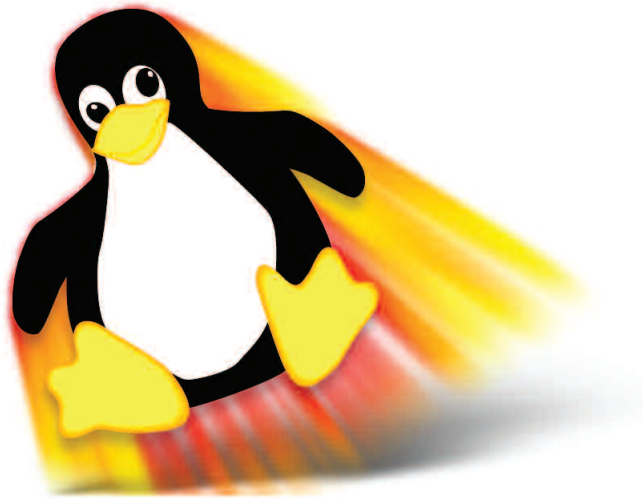
Wind River delivers the same message in a recent full-page advertisement. It asks: "Choosing Linux as your next device operating system?" It answers: "CHAOS" in large crooked letters, followed by "fatal error," "system crash," "game over," and "panic."

Even the greatest critics of embedded Linux have never been so harsh. The experts say that embedded Linux is "CHAOS" and "a money pit." With friends like these, who needs enemies?

One would expect Wind River and MontaVista to tout the advantages of their embedded Linux support, but why trash the product on which their business is based? If they are being unfair to embedded Linux, the Linux community will rise up to denounce them, destroying their embedded Linux support business.

It's more likely that Wind River and MontaVista are telling it as they see it—for marketing purposes. Marketing usually puts forward a problem (bad breath, headaches) that many potential customers will relate to, and then promises a solution. Why would Wind River and MontaVista put forward the problem of embedded Linux nightmares in marketing materials unless they think many potential customers have experienced those nightmares and need a solution? Wind River and MontaVista are certainly in a position to know how hard it is to use embedded Linux, because they are using it, supporting it, and selling it. And since their business is trying to pick up the pieces for companies that have already failed with embedded Linux, they have heard plenty of horror stories.

Wind River and MontaVista each say that they can tame the embedded Linux monster and make it work for customers. But can they? Trying to fix embedded Linux for eight years, MontaVista is reported to have lost over \$60,000,000, going through five rounds of venture capital, three rounds of layoffs, and three CEOs in the last two years. Since jumping on the Linux bandwagon, Wind River has gone from profitability to losses, recently announcing a layoff of 7% of their staff.



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So why are Wind River and MontaVista bashing embedded Linux? Each year, *Embedded System Design* magazine carries out a survey of embedded systems developers. Over a two year period from 2005 to 2007, the percentage of developers using embedded Linux and the percentage planning to use embedded Linux have both declined. And even more important, the percentage not interested in embedded Linux has nearly doubled.

According to *ESD's* analysis, most of those who are reasonable targets for embedded Linux (those with PC-like applications) have already adopted it. The rest have learned it is not appropriate and are moving on. See the article "Annual study uncovers the embedded market" (Richard Nass, www.embedded.com/design/opensource/201803499?pgno=2) for details of survey.

It seems clear what is happening: Wind River and MontaVista are trying to get the dwindling number of disenchanted embedded Linux users to pay them "big bucks" to escape the embedded Linux nightmare. They hope that if they can get enough customers signed up, they will finally get enough money to tame the beast.

But what happens if they cannot? There are indications that they may have exhausted the market. If Wind River fails to stem the tide, they will need to drop their support for embedded Linux to return to profitability. And if MontaVista doesn't show some sign of stemming their losses soon, their investors will pull the plug. When Wind River and MontaVista abandon embedded Linux, their customers will have to live the embedded Linux nightmare that Wind River and MontaVista are telling them—all too clearly—that they will have.

This embedded Linux bashing from embedded Linux's strongest proponents should give pause to those who are thinking through their embedded operating system strategy. If embedded Linux champions are saying that embedded Linux is terrible, why would anyone want to risk their products or their company on it?

Why would anyone use a product that its proponents say is awful? Would you buy a car from a salesman who admitted the car was a piece of junk just because he said he had a great service department? That's what embedded Linux's friends suggest that you do. With friends like these, who needs enemies? ■