

## Linux an embedded real-time operating system development and design (6)

[Date : 2006-7-23 ]

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V RTLinux performance test

Under section 2.2 of the interruption delayed introduction. In this chapter, we will RTLinux interruption delayed testing. Testing machines exist for Celeron 412MHz,196MB, RTLinux3.1+Linux-2.2.19 (with the same Linux? previous tests) conducted testing machines (testing procedures in appendix 2). Test results as shown in table 5.1 below :

Load types average minimum at around value

No load 2.36 2.10 15.50

Hard copies of the cycle 3.20 2.10 19.40

Calculated load 2.56 2.20 14.50

Table 5.1 immediately interrupted delay time (unit : s.)

N-load : all processes have killed

N hard disks circle copy : shell script in a hard disk copy cycle operation

N calculating load : one cycle of floating point operation procedures C

From the test results shows that response time is less than RTLinux interruption of the standard Linux interrupt response time. In disk copy of the largest load for 19.40 microsecond delay in the load cases, the standard Linux reached 500 microsecond delay.

To control the accuracy of the calculation, we operate a cycle immediately. In each cycle tasks up, record and compare it to the time recorded the largest value of time. 10% in value of time elsewhere. From the results we can see that RTLinux real-time processing is fully capable of operating system.

VI feelings and experiences

At present, information related to the plug-in system for the center is being vigorously developed. And the emer

ging markets is only the tip of the iceberg. I believe that as an embedded system and networking technology development, the whole world will be more networking and computing technology.

The world is colorful, and the pervasive impact of an embedded system must adapt to this changing world. An embedded system is changing! This feature is a plug-in system the debris of their markets. Any company has sufficient energy unified market. This has brought new rules of the game to emerging companies to opportunities.

OSS features to its very suitable for an embedded system. OSS to facilitate customized, we can extract from the various needs of the best software applications to their applications rise significantly saving development costs. I think service-oriented, with OSS as the main pillar of the company will be an embedded system markets important role.

We know that can lead to the formation of scale to reduce costs, and the plug-in diversity systems, but more importantly conventions, the application environment is changing. Therefore, if the use of closed source commercial software, because the cost can not be scaled up will be very high. Of course, in some areas can not be ruled out as Windows CE, PalmOS, a mature system advantages, but long-term perspective, more suitable for an embedded OSS systems. We look forward to more mature OSS appearance, and that is OSS commercialization good way out. I also hope that China's software industry to open source software revolution was in place.

Almost free way to get on the Linux, its commercial value precisely where? In other words, what kind of system is most needed Linux? I think most of the following three types of systems should use Linux :

Security-related systems. These systems should use open source systems to prevent the system from the back door closed. This includes key network servers, government departments and military servers, workstations, etc.

Real-time systems. Speaking of real-time systems, the same can not be built on the bottom of the black boxes on top of operating systems. This includes the use of real-time industrial control systems, various military systems.

An embedded system. An embedded system is highly customized system for an embedded system, there should be no overall system. To achieve customized to the needs of open source code operating system. This is the original Windows CE developers are now many reasons to Linux.

Therefore, Linux is facing the real-time plug-in systems. And many developers have realized this point and in the development of an embedded Linux devoted considerable human and financial resources. Integrated said, to the development of an embedded Linux operating system as a system, with the following advantages :

Linux portability of good development tools rich. Each CPU developers in a new plug-in CPU, each section will be put in a lot of human transplant Linux core, and providing rich development tool.

OSS. The open source Linux core, can greatly facilitate the development of customized systems.

Available resources. In the Linux system for development, access to resources such as the source code closed system more than others.

Low cost. Linux's low-cost characteristics, the ultimate plug-in systems can greatly reduce the cost and expand the profit developers of space.

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