

Introduction of Crackerjack Project

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Crackerjack **V3.2** has been released as the effort of CJK collaborative work



- Provide regression information of both distribution and release kernel for application and kernel developers.
- Support all system call as of 2.6.28 kernel, 317 system calls
- Automatic generation of incompatibility information for stable and release candidate(rc) kernel
- Collaboration with world wide test communities
 - Autotest : performance, reliability information,
 - Crackerjack : incompatibility information
 - LTP(Linux Test Project) : Source code contribution

A Add B Add

A \ B	RHEL4 2.6.9-89.EL	RHEL5 2.6.18-128.1.10.el5	RHEL5 2.6.18-194.el5	2.6.33.4-autotest	2.6.34.1-autotest	2.6.35-rc3-autotest	2.6.35-rc4-autotest
RHEL4 2.6.9-89.EL	SAME:339	SAME:291, DIFF:39	SAME:290, DIFF:40	SAME:286, DIFF:44	SAME:286, DIFF:44	SAME:286, DIFF:44	SAME:286, DIFF:44
RHEL5 2.6.18-128.1.10.el5	SAME:291, DIFF:39	SAME:349	SAME:348, DIFF:1	SAME:336, DIFF:13	SAME:335, DIFF:14	SAME:335, DIFF:14	SAME:336, DIFF:13
RHEL5 2.6.18-194.el5	SAME:290, DIFF:40	SAME:348, DIFF:1	SAME:349	SAME:335, DIFF:14	SAME:334, DIFF:15	SAME:334, DIFF:15	SAME:335, DIFF:14
2.6.33.4-autotest	SAME:286, DIFF:44	SAME:336, DIFF:13	SAME:335, DIFF:14	SAME:349	SAME:347, DIFF:2	SAME:346, DIFF:3	SAME:347, DIFF:2
2.6.34.1-autotest	SAME:286, DIFF:44	SAME:335, DIFF:14	SAME:334, DIFF:15	SAME:347, DIFF:2	SAME:349	SAME:348, DIFF:1	SAME:347, DIFF:2
2.6.35-rc3-autotest	SAME:286, DIFF:44	SAME:335, DIFF:14	SAME:334, DIFF:15	SAME:346, DIFF:3	SAME:348, DIFF:1	SAME:349	SAME:347, DIFF:2
2.6.35-rc4-autotest	SAME:286, DIFF:44	SAME:336, DIFF:13	SAME:335, DIFF:14	SAME:347, DIFF:2	SAME:347, DIFF:2	SAME:347, DIFF:2	SAME:349

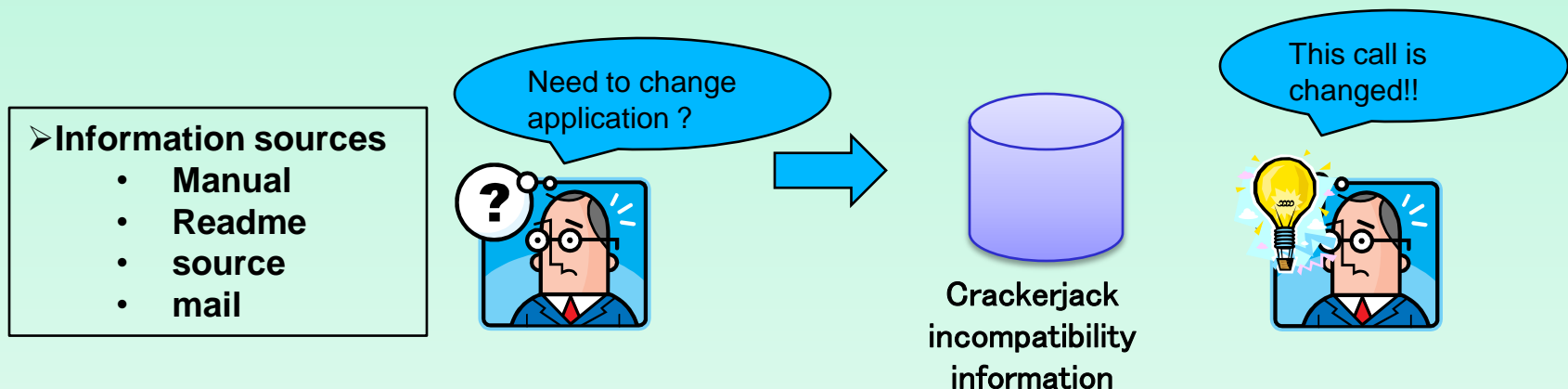
Background of the project



➤ Less incompatibility information of kernel update.

- A lot of information source : need to seek kernel source, LKML(Linux Kernel Mailing List), Manuals, ReadMe
- Information type : Almost information sources provide as of time, no information source to provide incompatibility information of versions.
- It is hard to find necessary incompatibility information.

➔ *Necessary to support the center of incompatibility information for everyone.*



Summary of incompatibility



Number of incompatibility

- Between RedHat Linux 4(2.6.9:Apr., '05) & 5(2.6.18:Apr., '07)
 - New system call : 20
 - incompatibility : 11
- Between RedHat5 and the latest kernel 2.6.32
 - New system call : 0
 - Incompatibility : 13

Problems

- Application may change its behavior
- Kernel developer does not recognize the changes

Example of incompatibility

System call returns another code even though same parameters

NG

C err log:

```
--- /tmp/a.28272.0 2009-10-09 00:26:30.000000000 +0900
+++ /tmp/b.28272.0 2009-10-07 20:02:23.000000000 +0900
@@ -11,8 +11,8 @@
[ 10] link(NOT_EXIST_FILE,EXIST_DIR) Return=-1, errno=2 : No such file or directory
[ 11] link(NOT_EXIST_FILE,SYMBOLIC_EXIST_FILE) Return=-1, errno=2 : No such file or directory
[ 12] link(NOT_EXIST_FILE,TOO_LONG_PATH) Return=-1, errno=2 : No such file or directory
- [ 13] link(NOT_EXIST_FILE,BAD_ADDRESS) Return=-1, errno=2 : No such file or directory
+ [ 14] link(NOT_EXIST_FILE,EMPTY_PATH) Return=-1, errno=2 : No such file or directory
- [ 13] link(NOT_EXIST_FILE,BAD_ADDRESS) Return=-1, errno=14 : Bad address
+ [ 14] link(NOT_EXIST_FILE,EMPTY_PATH) Return=-1, errno=14 : Bad address
[ 15] link(EXIST_DIR,EXIST_FILE) Return=-1, errno=17 : File exists
[ 16] link(EXIST_DIR,NOT_EXIST_FILE) Return=-1, errno=2 : No such file or directory
[ 17] link(EXIST_DIR,EXIST_DIR) Return=-1, errno=2 : No such file or directory
@@ -32,8 +32,8 @@
[ 31] link(TOO_LONG_PATH,EXIST_DIR) Return=-1, errno=36 : File name too long
[ 32] link(TOO_LONG_PATH,SYMBOLIC_EXIST_FILE) Return=-1, errno=36 : File name too long
[ 33] link(TOO_LONG_PATH,TOO_LONG_PATH) Return=-1, errno=36 : File name too long
- [ 34] link(TOO_LONG_PATH,BAD_ADDRESS) Return=-1, errno=36 : File name too long
- [ 35] link(TOO_LONG_PATH,EMPTY_PATH) Return=-1, errno=36 : File name too long
+ [ 34] link(TOO_LONG_PATH,BAD_ADDRESS) Return=-1, errno=14 : Bad address
+ [ 35] link(TOO_LONG_PATH,EMPTY_PATH) Return=-1, errno=14 : Bad address
[ 36] link(BAD_ADDRESS,EXIST_FILE) Return=-1, errno=14 : Bad address
[ 37] link(BAD_ADDRESS,NOT_EXIST_FILE) Return=-1, errno=2 : No such file or directory
[ 38] link(BAD_ADDRESS,EXIST_DIR) Return=-1, errno=2 : No such file or directory
```

One kernel returns errno 2, the other kernel returns 14, though

One kernel returns errno 36, the other kernel return 14, though

Activity in the year 2010



■ Collaboration work of China, Korea, Japan

-CJK have been working on following parts.

-Japan: Framework and 120 test functions, community approach

-Korea: 100 test functions

-China: 100 test functions

-Participant

-Japan: Hitachi, Chapter11, RedHat,

-Korea: SureSoft, Testmidas

-China: CSIP, CS2C, BST&QC

■ Activities

2010/3 Talking with RedHat

2010/4-8 Bug fixing for framework and test functions

2010/10 V3.2 release

2010/12? Compatibility information for RHEL6

New topic of 2010

➤ Since next RHEL, RedHat will refer our compatibility information of system call on IPA site in their Migration Guide for the convenience of application developers.

For more information on compatibility of system calls, please see <http://ossipedia.ipa.go.jp/crackerjack/index.html>

Reference

[Crackerjack: \(CJK\)](http://crackerjack.good-day.net/cjk)
System call compatibility Information

Distribution Kernels

[About Page]

- [Distribution Kernels](#)
- [Vanilla Kernels](#)
- [All Kernels](#)

A \ B	CentOS 5.2 2.6.18-92.1.22.el5	chll-desktop 2.6.24-23-generic	debian 2.6.26-1-686	Debian lenny eeepc 2.6.26-1-686	Fedora 10 2.6.27.15-170.2.24.fc10.i686	fedora-vn 2.6.25-2.6.22.17-14.fc9.i686	openSUSE 10.3 2.6.22.17-0.1-default	CentOS 5 2.6.18-53.1.14.el5	openses-vn 2.6.25-5-1.1-default	U g
CentOS 5.2 2.6.18-92.1.22.el5	SAME 342 DIFF 32	SAME 291 DIFF 32	SAME 305 DIFF 33	SAME 307 DIFF 35	SAME 312 DIFF 25	SAME 296 DIFF 34	SAME 238 DIFF 13	SAME 315 DIFF 10	SAME 264 DIFF 23	SA DI
chll-desktop 2.6.24-23-generic	SAME 292 DIFF 31	SAME 327	SAME 311 DIFF 15	SAME 309 DIFF 16	SAME 281 DIFF 39	SAME 292 DIFF 26	SAME 227 DIFF 12	SAME 301 DIFF 26	SAME 260 DIFF 26	SA DI
debian 2.6.26-1-686	SAME 306 DIFF 32	SAME 312 DIFF 14	SAME 349	SAME 331 DIFF 16	SAME 306 DIFF 36	SAME 293 DIFF 47	SAME 249 DIFF 11	SAME 297 DIFF 31	SAME 267 DIFF 24	SA DI
Debian lenny eeepc 2.6.26-1-686	SAME 308 DIFF 34	SAME 309 DIFF 16	SAME 331 DIFF 16	SAME 351	SAME 310 DIFF 36	SAME 288 DIFF 51	SAME 249 DIFF 10	SAME 290 DIFF 37	SAME 262 DIFF 28	SA DI



Red Hat Migration Guide

Compatibility Information for Application Developers



Red Hat's statement

Red Hat believes that the CrackerJack project could be helpful to the cause of promoting OSS by improving the quality of information about OSS platforms such as Red Hat Enterprise Linux.

To that end, Red Hat will strongly consider adding CrackerJack to Red Hat QA processes, and plans to reference CrackerJack results in its RHEL6 migration guide, which will be published as part of the RHEL6 general release.

Red Hat may also reference CrackerJack in other places on its public website where such information may be appropriate. We expect to be able to say:

For more information on compatibility of system calls between RHEL 5 and RHEL 6, please see <http://ossipedia.ipa.go.jp/crackerjack/index.html>[*]

[*] This site is supported by IPA, Japan

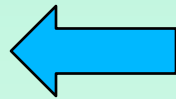
We will confirm this decision as soon as possible, and hopefully in time for the announcement of the public beta of RHEL 6.

Collaboration with Autotest



- A various information for users from collaboration with communities
 - Collaboration with **Autotest site** which provides performance, reliability information

Various information to users



Autotest: **Performance** information

Autotest: **Reliability** Information

Crackerjack: **incompatibility** information

History of the Project



- 1st Term : 2006.11 -> 2007.9
 - Agreed to start CJK collaboration work in WG1.
 - 1st Developer's Camp in Beijing.
 - Assigned each country's work(Each country agreed to develop 100 test suites by each country).
 - Output of collaboration : **Release 1.0 : 133 system call supported.**



2006.12 1st Crackerjack Camp(Beijing)

History of the Project

- 2nd Term : 2007.9 -> 2008.4
 - Agreed to continue CJK collaboration work in WG1.
 - Support remain system call(CJK developed about 100 system call by each country)
 - Started promotion work to World Wide Communities.
 - Output of collaboration : **Release 2.0 : 273 system call supported.**



2007.6 Collaboration Summit(US Google)

History of the Project



➤ 3rd Term : 2008.5 -> 2009.10

- Catch up with the latest kernel system call
- Continue promotion work to World Wide Communities
- 2nd and 3rd developer's Camp in Beijing.
- Output of collaboration :
 - **Release 3.0 : 317 system call supported.**
 - **Released on IPA site**
- Community work :
 - **Source code contribution to Linux Test Project**
 - **Mutual Link to Autotest Project**
 - **Will be Linked from RedHat migration guide**



2008.9 2nd Developer Camp in Beijing