



# OSDL-Japan Linux Symposium

## Large System

Moderator  
Hashimoto Hisashi  
Hitachi, Ltd.  
Open Source Development Labs

# Linux is spreading into wide area

- Embedded Area
  - Cellular phone
  - PDA
- DeskTop Area
  - OA System/Server
  - Replacing existing commercial OS
- *Large Server System*
  - *Replacing commercial UNIX.*



# Kernel in Large System

- A lots of Success
  - Number of supporting CPUs is becoming greater.
    - New CPU Management
    - New Interruption Mechanism
  - Improved Granularity of Lock (a.k.a. BLK problems)
    - Multi-process will run more efficiently
- Linux is becoming top athlete in this area.



# Hardware Progress

- System resource will increase :
  - Multi-core CPU
  - Memory size will become bigger
  - Storage Size will become bigger as well
  - Number of peripherals attached.
- We still have to enhance kernel to fit and follow this hardware progress.

# New Challenge: Memory management

- Issues to be solved
  - Most of physical memory are occupied by page cache.
  - System reboot/shutdown.
    - More dirty pages, more time to clean up.
    - Shutdown may need time to clean dirty pages.
  - Page Allocation method
    - Defragmentation will occur
    - A lot of contiguous memory can not be allocated
  - Page header tables for big size memory will require a lot of low memory.

# New Challenge: I/O Management

- LVM/UDEV will handle Large Storage System.
- Enhancement Idea
  - Tool for volumes in consistently manner.
    - Adding/Removing new/existing Logical Volumes
  - IPL requires some time to recognize volumes
  - File System Corruption
    - Fck needs a lot of time.
  - File System re-configuration
    - Dynamic File System size change

# New Challenge: Peripherals Management

- Redundancy
  - Hardware should be broken.
  - Running even if some parts are broken/removed
- Recognition of dynamic new adding hardware
  - System can not stop while some parts are replaced
- Parallel device recognition at boot time
  - More number of device may require more time to initialize.

# Brush-up of BKL (Big Kernel Lock)

- A lots of BKL were gone, but some may remain
- Current Kernel works/runs well on current system.
- But system/hardware would grow year by year.
- Continuous checking BKL is important.

# Discussion Point

- For Japanese engineers to find the opportunities to contribute developing kernel.
- What you are expecting to Japanese kernel engineers
- What and How Japan community contribute.
  - What area Japanese engineers are interested in
  - What we can contribute





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