



OS/2 Device Driver Support / USB 2.0

Modris Berzonis
(modrisb@exigengroup.lv)

Summary

- Updated driver packages
- USB & OS/2
- Stack design
- Supported client/class drivers
- Supported host controller drivers
- APM & driver stack
- USB 2.0 support
- Class driver extensions?
- Driver Code sizes

Updated Driver Packages

- Intel Gigabit Ethernet driver
- UDF 2.0
- IDEDASD
- Large hard disk support (512GB)
- SingleMouse

Intel Gigabit Ethernet

- New chipsets added - 82541GI/82543GC
- More flexible parameter processing
- TCP/IP & NETBIOS coexistence
- Suspend/resume support
- Performance reached up to 57 MBps by varying
 - transmit/receive buffer counts (8-255)
 - Frame size (regular/jumbo)
 - MTU value
 - Disk operation mode (avoid PIO)
- Debug version

UDF 2.01

- Suspend/resume support
 - IFS stops sending I/O requests to device(s) after suspend notifications
 - IFS does not send I/O requests to device(s) before device has not completed resume activities
- Mt.Rainier support
- Format extensions – verification support
- Performance improvements
 - 6 X 64KB cache buffers
 - Write on sorted LBA
 - Enhanced buffer flush procedure

UDF 2.01

- Features to come
 - Defect management for CD-RW / DVD+/-RW
 - New format modes:
 - Erasing
 - Wait for background format completion
 - Support of 3 different UDF revision formats
 - Logical format performance increase
 - Background format suspend for CD-MRW
 - Logical format bypassing

IDEDASD

- ICH6 support
- SMART command support
 - Developer information will be published
- Resume code enhancement
- Extended detection update

Large Hard Disk Support (512GB)

- Sector per track count increase
- Fixed cylinder count calculation algorithm
- Limited boot support – disk size up to 512GB
- Data disk size up to 2TB
- Updates in OS2LVM.DMD/ OS2DASD.DMD/ LVM.DLL/ UHPFS.DLL

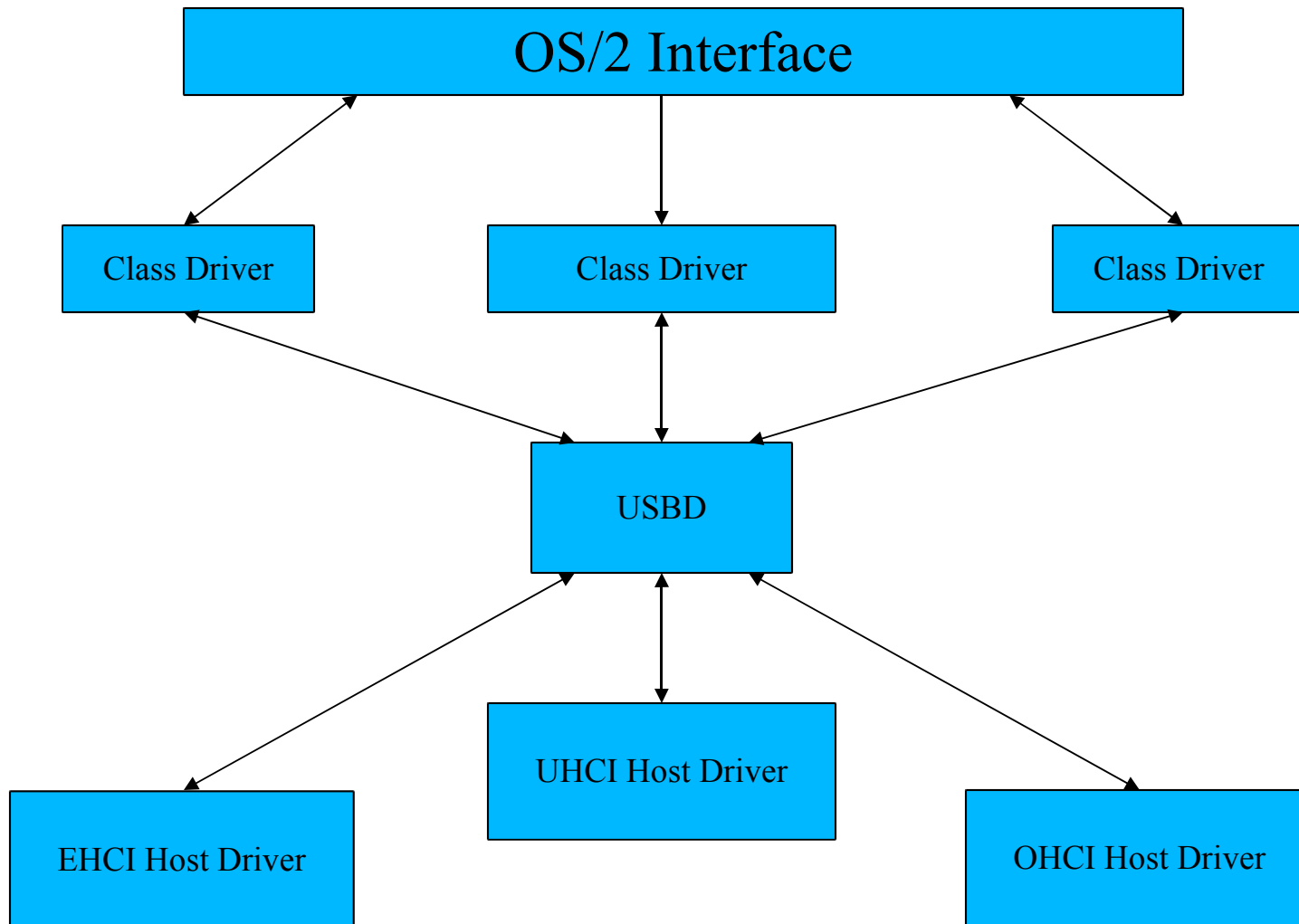
SingleMouse

- Problem fixes for systems without USB mouse installed

OS/2 & USB

- Started development in 1997
- Limited driver support for USB 1.0/1.1
- Added USB 2.0 support in 2002

Stack Design



Supported Client/Class Drivers

Ethernet – only vendor specific interface

- Kawasaki KL5KUSB101 chipset
- MPTS controlled vendor/device IDs

- Serial converter

- 3 different vendor specific interfaces
 - 1 - Future Technology Devices International FT8U100AX chip
 - 2 - Belkin F5U103
 - 3 – MCT (Magic Control Technology) USB to RS232 converter
- vendor/device ID specification through CONFIG.SYS parameters :USBSer.sys [/V] [/IDV:hhhh /IDP:hhhh /TYPE:d]

Supported Client/Class Drivers

- Modem
 - ACM (abstract control model / AT command mode)
- Quatech USB to serial converters
- Mass Storage devices
 - Support for hard disk class (floppy drives / removables / hard disks); CDROM class and Optical device class
 - Works with predefined number of devices in each class, like: /FLOPPIES:i /REMOVABLES:j /FIXED_DISKS:k /CDS:l /OPTICALS:m
 - Predefined floppy size list, includes LS120/LS240 devices
 - Multi-LUN device support
 - Device status monitor support

Supported Client/Class Drivers

- Mass Storage devices
 - Port reset feature
- Printers
 - Request cancellation with status return

APM & driver stack

- Controlled through USBD driver
- Implementation for MSD class driver
 - Switching off motor during suspend event processing

Supported Host Controller Drivers

- UHCI
 - Only USB v1.0/1.1
 - Companion controller for EHCI
- OHCI
 - Only USB v1.0/1.1
 - Possible companion controller for EHCI
- EHCI
 - Only USB v2.0
 - Requires companion controller(s) to support 1.0/1.1 devices

USB 2.0 support

- New host controller driver
- Minimal changes in USBD/Class drivers
- MSD driver extension to support larger data buffers

Class/Host Driver Extensions?

- Communication Class
 - Extended modem support
 - Ethernet support
 - ISDN modem support
- MSD
 - Optical device support
- IrDA bridge
- Imaging
- Cardbus USB host support

Driver Code Sizes

- Host Controller drivers
 - UHCI 10 Kloc
 - OHCI 11 Kloc
 - EHCI 14 Kloc
- USB driver 6 Kloc
- Keyboard 2.5 Kloc
- Mouse 4 Kloc
- Ethernet 5 Kloc
- HID 3 Kloc
- Serial 6 Kloc
- Audio 12 Kloc
- MSD 11 Kloc