

Why does my machine take  
so long to boot?

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# Background

- Modern computers: Faster ...and slower?
- Getting to the bottom of slower boot times

# Case Study: HP Superdome

Up to 16 IO chassis  
x 12 PCI-X slots per chassis

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**192 PCI-X slots**



# SCSI takes too long

- Sequential probing
- Additional impact of dual-port cards
- Typical boot time:

**90 minutes**

- Solving the problem through multithreading

# SCSI Subsystem Implications

- Verbosity
- Changing `printk()`

# Disc Naming

- Preserving stability
- sysfs gives devices their name
- A victim of my own success
- Modular heartburn

# Complications

- Fibre Channel & SAS
  - No bus
  - `scsi_scan_host()` **VS.** `scsi_scan_target()`
- **async scans**

# Second Phase

- `scsi_prep_async_scan()` and `scsi_finish_async_scan()`
- `scsi_target_discovery()`
- `scsi_scan_host()`



# Status

- Merged into 2.6.20-rc1
  - Qlogic qla2xxx support
- Patches to be merged
  - Emulex lpfc driver
  - aic94xx SAS driver
  - libata drivers
- Patches to be written
  - zfc, fc4, ...

# Who wins ...and who doesn't

- Winners:
  - People with large systems
  - People with only one SCSI bus
- Losers:
  - People with USB/Firewire devices
- Other issues
  - Power consumption

# PCI parallel probe

- Works for non-SCSI devices
- Devices named at random
- Some drivers are buggy
- Discs sometimes not found before init starts

# Credits

- Hewlett Packard
- Justin Chen
- James Bottomley
- Andrew Vasquez, James Smart, Eric Moore, Anton Blanchard
- Darrick Wong
- Danielle Cole-Wilcox