Remote Management
Large-Scale Remote Management via IPMI
CERN History

- 2003
  - *serial consoles* with logging
  - SLAC example and software
  - remote-restart *SysRq*
  - affordable but cabling is an issue
CERN History (cont'd)

• 2007
  • serial console for ~5000 hosts
  • IPMI power control for ~900
  • most future deliveries to use IPMI
  • console, power (ACPI!), reset, SysRq
Free Extras?

- Orderly (ACPI) emergency shutdown
- Switch off unneeded capacity
- Bootup in service order
- ...

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HEPiX 2007 fall meeting
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Monitoring via IPMI

- Available remotely...
  - ...but we do this in-band
- What we monitor:
  - thermal and voltage alarms
  - failed PSUs (PSU support required)
  - ECC errors, PCI parity errors
IPMI tips, tricks, magic

- Add-on card (BMC): motherboard support req'd
- Don't believe the vendors: TEST
  - some blades have IPMI within the chassis only
- What to look for:
  - IPMI 2.0 – encrypted authentication (no 1.5 please)
  - RMCP+ – encrypted wire transfer (for console)
- Physical interface
  - shared with host or separate?
- Management
  - firmware, access control, own IP+MAC addresses...
Integration

- **iCow:** wrapper for consoles
  - also integrates XEN VM consoles
  - solves logging, keeps user interface
    - SysRq (Break) different
- **Password management**
  - per-host generated random passwords
  - user interface for power control
- **Power control:**
  - could integrate with VM "virtual power button"?
Future?

- **IPMI for several years**
- Intel Active Management Technology?
  - too complex, security concerns
- KVMs and/or HTTP in BMC?
  - too complex, no added functionality (for us)
- Would like: authentication options in BMC
Links

- **IPMI:**
  - http://www.intel.com/design/servers/ipmi/
  - https://twiki.cern.ch/twiki/bin/view/FIOgroup/IpmiRef

- **ipmitool**
  - http://ipmitool.sourceforge.net/

- **console over IPMI:**
  - https://twiki.cern.ch/twiki/bin/view/FIOgroup/TsiConsoleIPMI