

# Remote Management

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# CERN History

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- 2003
  - **serial consoles** with logging
  - SLAC example and software
  - ~~remote restart~~ SysRq
  - affordable but cabling is an issue

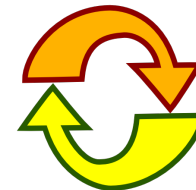




# CERN History (cont'd)

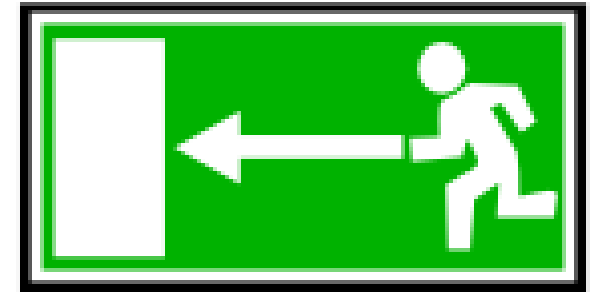
- 2007

- 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
- ...



# Monitoring via IPMI

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- 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

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- 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

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- **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?

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- *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

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- 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>