The Quest for Noiseless Computers

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Why?
noiseless computers

power outage!

sometime, a while back all power was cut at The Knoll – and it was a different building!

no noise whatsoever!
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the easy answer:

TURN IT OFF!
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the TURN IT OFF! solution:

- no noise
- no kernel crashes
- no operating system problems
- no application problems
- no documentation problems
- and the list goes on, in a word ... bliss ...
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the real reason:
The Knoll remodeling
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a beautiful small concert hall
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- move it somewhere else:
  - closets
  - rooms
  - but: no space for that in The Knoll

- hide it:
  - isolation boxes
    - not very effective (they have fans!)
    - expensive
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- Sources: FANS...
  - case fans
  - power supply fan
  - cpu cooler fan
  - chipset coolers
  - video card fans
  - other misc fans
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- Sources: STORAGE...
  - hard disks
  - optical storage
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• solutions:
  – case fans: big and slow is good
    • select a good case!
  – power supply fans: same, or no fans
    • you get what you pay for...
  – cpu cooler fans: same
    • and choose the right cpu...
  – chipset fans: do without them (passive)
  – video card fans: do without them (passive)
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• water cooling:
  – a closed loop with:
    • reservoir
    • pump
    • heat transfer blocks (cpu, chipset, video card)
    • a radiator
    • and guess what: fans! (again!)

we still have moving parts...
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• water cooling:
  – a closed loop with:
    • reservoir
    • pump
    • heat transfer blocks (cpu, chipset, video card)
    • a radiator
    • and guess what: fans! (again!)

we still have moving parts... and fans...
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- fanless water cooling:
  - a passive cooling tower
  - a very low noise pump
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• fanless water cooling:
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• add:
  - fanless power supply
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- fanless water cooling:
  - a passive cooling tower
  - a very low noise pump
- add:
  - fanless power supply
  - a case with good air flow and damping

and you are there!
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- reserator
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- **passive cooling:**
  - cases designed to have no fans
    - big heat sinks with fins
    - heat pipe technology to transfer heat

- **available:**
  - mCubed HFX

- **we used:**
  - zalman tnn500 / tnn300
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- mCubed HFX

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- TNN500
  - 100W
  - ATX
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- TNN300
  - 70W
  - mATX
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- passive cooling:
  - tnn500 / tnn300
  - bad news:
    - very expensive
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• passive cooling:
  – tnn500 / tnn300
  – bad news:
    • very expensive
  – worse news:
    • no longer manufactured
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some measurements...
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- storage:
  - hard disks (currently samsung f1 is good)
    - 2.5" - but slower
  - solid state disks, expensive
  - netbooting, tricky

- dvd writers, oh well, noisy...
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- laptops:
  - coolers, not much difference...
- macs:
  - silent – when they are doing nothing...
- video projectors
  - no solution...
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thanks...

questions?
answers?