Hitchhiker Guide to Hardware Maintenance

Hélder Silva

Porto Summer of Code, 2016

Outline

Cleaning

- Remove heat sinks (laptops and desktops)
- Clean the fans and air vents
- Change thermal paste

Heat

Dust acts as a thermal insulator and reduces airflow, thereby reducing heat sink and fan performance.

Poor heat transfer due to poor thermal contact between components to be cooled and cooling devices.

Throttle

Because high temperatures can significantly reduce life span or cause permanent damage to components, and the heat output of components can sometimes exceed the computer's cooling capacity, manufacturers often take additional precautions to ensure that temperatures remain within safe limits.

Throttling reduces the operating frequency and voltage of an integrated circuit or disables non-essential features of the chip to reduce heat output, often at the cost of slightly or significantly reduced performance.

Damage prevention

Most components can shut themselves down when high temperatures are detected to prevent permanent damage.

This may not completely guarantee long-term safe operation.

Disassembly

- Search for "[model] service manual" on youtube/google
- Whatch the video (more than once)
- ????
- Profit

Consumables

- Alcohol (70% solution is enough but the higher the percentage the better)
- Cotton swabs/balls
- Paper towel
- Thermal paste
- Thermal pads

Opening

- ESD safe Gloves
- Anti-Static Wrist Strap
- Screwdriver
- Guitar picks
- Tweezers
- Magnetic pad (optional)

Cleaning

- Anti-Static Brush
- Dust Blower
- Microfiber Cleaning Cloths

Disassembly

Thermal Paste

Cleaning

Questions?

Go ahead, ask me anything (hardware related ^^).

Let's GO

HANDS ON =D