

Lab 9-1

Using the Recovery Console



Today we will look at...

The PC's Internal Power Supply

Common Power Supply Problems

Power Supply Troubleshooting

Two Types of Power Supplies

Linear Power Supplies

Switching Power Supplies

Linear Power Supply

Uses a transformer to produce different output voltages

Heavy

Hot

Sensitive to input voltage changes

Used in monitors but not PCs

Switching Power Supply

Uses a high-speed oscillator circuit

Steps down voltage by switching it on and off

Runs cooler than linear supplies

Switching Power Supply

Needs to be loaded before it will operate properly.

Needs feedback voltages to enable output.

Requires protection circuitry for overload conditions.

Should a PC be left running all the time or should the user turn it off when finished using it?

Turning it On/Off

Subjects the PC's internal components to thermal stress.

Leaving it On

Subjects the PC's owner to increased electric bills.



Common Power Supply Problems

Common Power Supply Problems

“Cheap” power supplies tend to be noisy and unstable.

Common Power Supply Problems

They can run hot and cause other system components to do the same.

Common Power Supply Problems

Power supply may have a noisy fan that can cause electrical noise in the computer circuits.

Common Power Supply Problems

If the fan fails, the system may be damaged by excessive temperatures.

Power Supply Troubleshooting

Power Supply Troubleshooting

Definition

Power supply troubleshooting is a sequence of steps you can take to determine if a power supply is defective.

Power Supply Troubleshooting...

...does not mean opening the power supply case. DO NOT open the power supply case!

Instead of opening the power supply case and trying to fix it yourself...

Replace it.

Send it to a depot for repair.

Avoid the dangers.

PC problems that are power supply related...

System start-up failures or power-on lockups.

Self rebooting/lockups happen.

There are occasional memory parity check errors.

PC problems that are power supply related (continued)...

Drives and fan quit working at same time.

A bad power supply may cause PC overheating. (Is the power supply fan dead?)

Computer generates too much heat.

PC problems that are power supply related (continued)...

Small brownouts cause system resets.

User complains of getting shocks off the PC case.

Static discharges cause system problems.

Computer won't turn on.

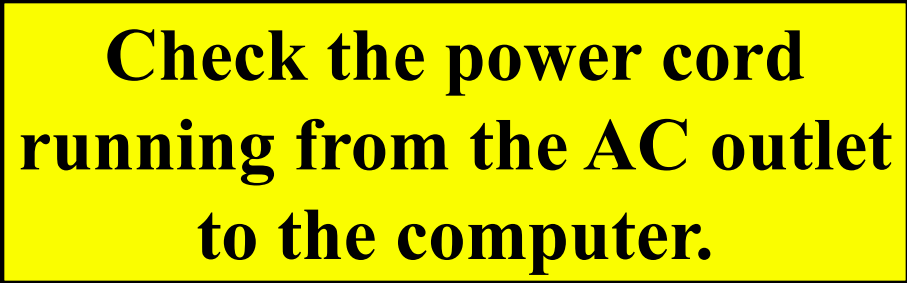
Computer won't turn on...

Check the AC outlet for available power.

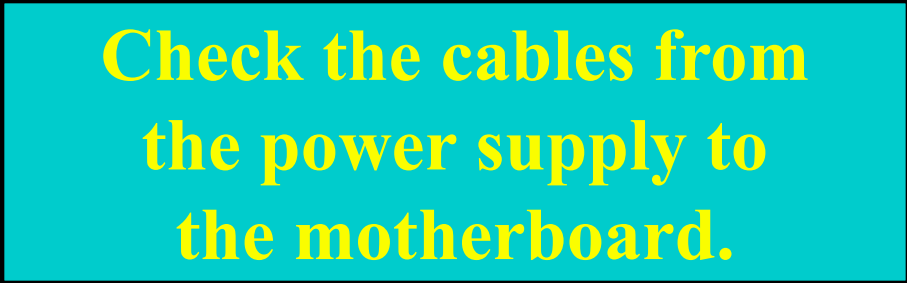


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graph TD; A[Check the AC outlet for available power.] --> B[Check the power cord running from the AC outlet to the computer.]; B --> C[Check the cables from the power supply to the motherboard.]; C --> D[ ];
```

Check the power cord running from the AC outlet to the computer.



Check the cables from the power supply to the motherboard.



Computer won't turn on (continued)...

**Is the Power Supply's fan
running?**



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graph TD; A[Is the Power Supply's fan running?] --> B[Swap the Power Supply for a known good one.];
```

**Swap the Power Supply
for a known good one.**

Simple Power Supply Tests

Simple Power Supply Tests...

Replace with a power supply you know is good.

With the computer turned on, measure the DC voltages on the cables running from the power supply to the motherboard and drives.

Check the Power Good pin—should be approximately +5VDC.)

Simple Power Supply Tests (continued)...

Test with a variable voltage transformer. (A PC power supply should operate fine between 90-137 VAC.)

Simple Power Supply Tests (continued)...

Test with a power meter to see if the PC is drawing close to the maximum power the supply is rated at.

Now, it's your turn.