M710s

Lenovo ThinkCentre M710s Upgrade and Modifications

For @Biotechy

THIS IS A CONCEPT GUIDE!!!! Do your Own Research before working on your own system

TESRTECK

Initial Inquiry

Question: lenovo m710s upgrades. What can I do with this model.

Response: Upgrade options and advanced modifications for the Lenovo ThinkCentre M710s to maximize its performance. It includes information about standard upgrades and details on enabling support for 8th and 9th Gen Intel CPUs through hardware and software modifications.

Standard Upgrades

- Memory (RAM): Upgrade up to 32GB DDR4 for better multitasking.
- Storage: Use an M.2 NVMe SSD for faster boot times and application loading. Pair with a larger HDD or SSD for bulk storage.
- Processor (CPU): Upgrade to a 6th or 7th Gen Intel Core i7-7700 for maximum native performance.
- GPU: Install a low-profile GPU such as NVIDIA GTX 1650 or AMD RX 6400.
- PSU: Replace the 180W or 210W PSU with a higher-capacity one if needed.
- Networking: Add a Wi-Fi 6 PCIe card or Bluetooth 5.0 adapter.
- Cooling: Enhance thermal performance with aftermarket low-profile CPU coolers and regular cleaning.

The Lenovo ThinkCentre M710s supports a range of CPUs, primarily from the 6th Generation (Skylake) and 7th Generation (Kaby Lake) Intel Core processors, as determined by the motherboard's compatibility and chipset. Here's the list:

Supported CPUs (Standard, No Modifications):

6th Generation (Skylake):

- **Core i7 Processors:**
  Intel Core i7-6700 (4 cores, 8 threads, up to 4.0 GHz, 8MB Cache)

- **Core i5 Processors:**
  - Intel Core i5-6600 (4 cores, 4 threads, up to 3.9 GHz, 6MB Cache)
  - Intel Core i5-6500 (4 cores, 4 threads, up to 3.6 GHz, 6MB Cache)
  - Intel Core i5-6400 (4 cores, 4 threads, up to 3.3 GHz, 6MB Cache)
- **Core i3 Processors:**
  - Intel Core i3-6100 (2 cores, 4 threads, up to 3.7 GHz, 3MB Cache)
  - Intel Core i3-6300 (2 cores, 4 threads, up to 3.8 GHz, 4MB Cache)
- **Pentium Processors:**
  - Intel Pentium G4400
  - Intel Pentium G4500
- **Celeron Processors:**
  Intel Celeron G3900

7th Generation (Kaby Lake):

- Core i7 Processors:
  - Intel Core i7-7700 (4 cores, 8 threads, up to 4.2 GHz, 8MB Cache)
  - Intel Core i7-7700T (4 cores, 8 threads, up to 3.8 GHz, 8MB Cache, 35W TDP)
- Core i5 Processors:
  - Intel Core i5-7600 (4 cores, 4 threads, up to 4.1 GHz, 6MB Cache)
  - Intel Core i5-7500 (4 cores, 4 threads, up to 3.8 GHz, 6MB Cache)
  - Intel Core i5-7400 (4 cores, 4 threads, up to 3.5 GHz, 6MB Cache)
- Core i3 Processors:
  - Intel Core i3-7100 (2 cores, 4 threads, up to 3.9 GHz, 3MB Cache)
  - Intel Core i3-7300 (2 cores, 4 threads, up to 4.0 GHz, 4MB Cache)
- Pentium Processors:
  - Intel Pentium G4560 (2 cores, 4 threads, up to 3.5 GHz, 3MB Cache)
  - Intel Pentium G4600 (2 cores, 4 threads, up to 3.6 GHz, 3MB Cache)
- Celeron Processors:
  - Intel Celeron G3930
  - Intel Celeron G3950

Step 1: Gather Necessary Tools and Components

1. Tools:

- A Phillips-head screwdriver.
- An anti-static wrist strap (optional but recommended).
- A clean, static-free workspace.

2. Components for Upgrades:

- RAM: DDR4-2400 or DDR4-2666 memory (up to 32GB, check existing RAM for compatibility).
- Storage: M.2 NVMe SSD (e.g., 1TB Samsung 970 Evo) or 2.5-inch SATA SSD/HDD.
- Processor: Intel Core i7-7700 (highest native supported CPU for the system).
- GPU (optional): A low-profile card like NVIDIA GTX 1650 or AMD RX 6400.
- Wi-Fi/Bluetooth (optional): PCIe Wi-Fi 6 card with Bluetooth 5.0.
- Power Supply (optional): A compatible SFF PSU with higher wattage if needed.

Step 2: Power Down and Prepare

1. Shut down the computer completely.
2. Unplug the power cable and disconnect all peripherals.
3. Press the power button for 10 seconds to discharge residual electricity.
4. Open the case by unscrewing the side panel and sliding it off.

Step 3: Upgrade Memory (RAM)

1. Locate the RAM slots on the motherboard.

2. If replacing existing RAM:

- Push the clips on both ends of the RAM module outward to release it.

3. Align the new RAM module with the slot, ensuring the notch matches.

4. Press the RAM firmly into place until the clips snap back.

Step 4: Upgrade Storage

1. For M.2 NVMe SSD:

- Locate the M.2 slot on the motherboard.
- Unscrew the mounting screw at the end of the slot.
- Insert the SSD at a slight angle into the slot.
- Secure the SSD by screwing it down gently.

2. For 2.5-inch SATA SSD/HDD:

- Mount the drive into the 2.5-inch bay using screws or the included caddy.
- Connect the SATA power and data cables.

Step 5: Upgrade the Processor (CPU)

1. Unlock the CPU cooler by loosening its screws or unclipping it from the motherboard.

2. Disconnect the cooler's power cable and remove it.

3. Release the CPU socket lever and carefully remove the old CPU.

4. Insert the new CPU, aligning the notches on the CPU with the socket.

5. Apply a small amount of thermal paste to the CPU.

6. Reinstall the CPU cooler, ensuring even contact with the CPU.

Step 6: Upgrade the GPU (Optional)

1. Remove the PCIe slot cover for the slot where the GPU will be installed.

2. Insert the GPU into the PCIe x16 slot and press down firmly until it clicks.

3. Secure the GPU with the screw removed earlier.

4. If the GPU requires additional power, connect the appropriate cables from the PSU.

Step 7: Upgrade Networking (Optional)

1. Locate an open PCIe slot for the Wi-Fi/Bluetooth card.

2. Insert the card and secure it with a screw.

3. Attach the external antennas.

Step 8: Upgrade the PSU (Optional)

1. Disconnect all existing power cables from components.

2. Unscrew and remove the old PSU.

3. Install the new PSU and secure it with screws.

4. Connect power cables to the motherboard, CPU, GPU, and drives as required.

Step 9: Reassemble and Power On

1. Close the case and secure the side panel with screws.

2. Reconnect peripherals and plug in the power cable.

3. Turn on the system and enter the BIOS (usually by pressing F2 or DEL during boot).

4. Confirm that the new components are detected.

Step 10: Install or Update Drivers

1. Install any necessary drivers for the new hardware.

2. Update the BIOS if needed to ensure compatibility with upgrades.

Upgrading to 8th/9th Gen CPUs

The ThinkCentre M710s does not natively support 8th or 9th Gen Intel CPUs. However, with advanced modifications such as a motherboard replacement, BIOS modding, or socket pin modifications, you can enable support for these CPUs. Below is a detailed guide for performing a pin mod to enable 8th/9th Gen CPUs.

Pin Mod Guide for 8th/9th Gen CPUs

1. Research your motherboard: Verify chipset compatibility and locate community guides for your model.

2. Modify the CPU socket: Use Kapton tape or nail polish to isolate unused pins, and conductive paint to reroute necessary signals.

3. Flash a modified BIOS: Add Coffee Lake CPU support by flashing a custom BIOS using a CH341A programmer.

4. Test the setup: Reassemble the system and confirm CPU recognition in BIOS.

Warnings and Risks

This process is risky and may damage your CPU or motherboard. Proceed only if you are experienced with hardware modifications and have the necessary tools. Ensure you follow an ESD-safe procedure to avoid static damage.