COMPARATIVE STUDY ON DIFFERENT TYPES OF MOTHERBOARDS

INTRODUCTION

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- A motherboard is the main part of a computer that connects all the important pieces, like the CPU, memory, and storage. It decides what parts are compatible and what the computer can do.

- The differences between motherboard types is crucial for building an optimized system, whether for gaming, professional work, or everyday use.

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- choosing the right motherboard ensures compatibility and maximizes system performance.

- The differences between motherboard types is crucial for building an optimized system, whether for gaming, professional work, or everyday use.

- Choosing the right motherboard is important because it sets the limits on what your computer can do and how long it will stay useful as technology changes.

- It's often called the "heart" or "foundation" of a computer system.

BUILD

CPU SLOTS (SOCKET):

MEMORY SLOTS (RAM SLOTS):

- Refers to the size and design of the motherboard (e.g., ATX, Micro-ATX).
- Determines how many components it can support.

- The spot where the CPU is placed.
- Determines which processors are compatible (e.g., LGA, AM4).

- Hold the RAM sticks for memory.
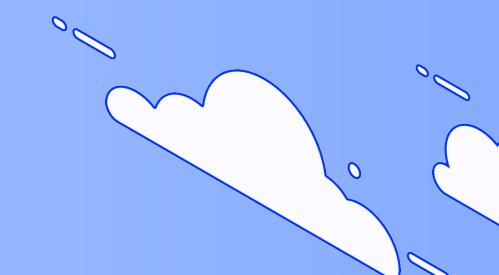- Number and type (e.g., DDR4, DDR5) affect memory capacity and speed.

CHIPSETS:

- A set of microchips that manage data flow between the CPU, memory, and other parts.
- Determines motherboard features (e.g., USB ports, storage support).

BIOS (BASIC INPUT/OUTPUT SYSTEM):

- Software built into the motherboard that starts up the system.
- Modern versions use UEFI, which supports larger storage and is more user-friendly.

PCI SLOTS:

- Expansion slots for adding components like graphics and network cards.
- Number and type (e.g., PCIe x16) decide the types of components you can add.

SATA (SERIAL ATA):

- Connectors for storage drives like HDDs and SSDs.
- Number of SATA ports determines how many drives can be connected.

BUILT-IN FEATURES:

- Includes onboard audio, Ethernet, Wi-Fi, and USB ports.
- More built-in features mean fewer additional components are needed.

These components together determine a computer's capabilities and upgrade potential.

Form Factor	Build	CPU Slots	Memory Slots	Chipsets	BIOS Type	PCI Slots	SATA Ports	Built-in Features
AT Motherboard	Legacy	1	2-4	Basic	Legacy	2-4	2-4	Minimal
ATX Motherboard	Standard	1	2-8	Advanced	UEFI/BIOS	3-7	4-8	Enhanced audio, USB 3.0+
BTX Motherboard	Uncommon	1	2-4	Varies	UEFI/BIOS	2-6	2-6	Improved airflow design
Extended-ATX Motherboard	High-End	1	4-16	Advanced	UEFI	4-8	6-12	Multiple GPU support
LPX Motherboard	Compact	1	2-4	Basic	Legacy	1-2	1-2	Integrated graphics
Micro-ATX Motherboard	Compact	1	2-4	Advanced	UEFI/BIOS	2-4	2-6	Cost-effective, versatile
Mini ITX Motherboard	Ultra-Compact	1	1-2	Advanced	UEFI	1-2	1-4	Low power consumption
Mini-ATX Motherboard	Compact	1	1-2	Varies	UEFI	2-3	1-4	Limited expansion slots
Pico BTX Motherboard	Ultra-Small	1	1-2	Basic	UEFI	0-1	1-2	Integrated components
Standard-ATX Motherboard	Mainstream	1	2-8	Advanced	UEFI/BIOS	3-7	4-8	Balanced performance

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