Learn about different types of RAM servers

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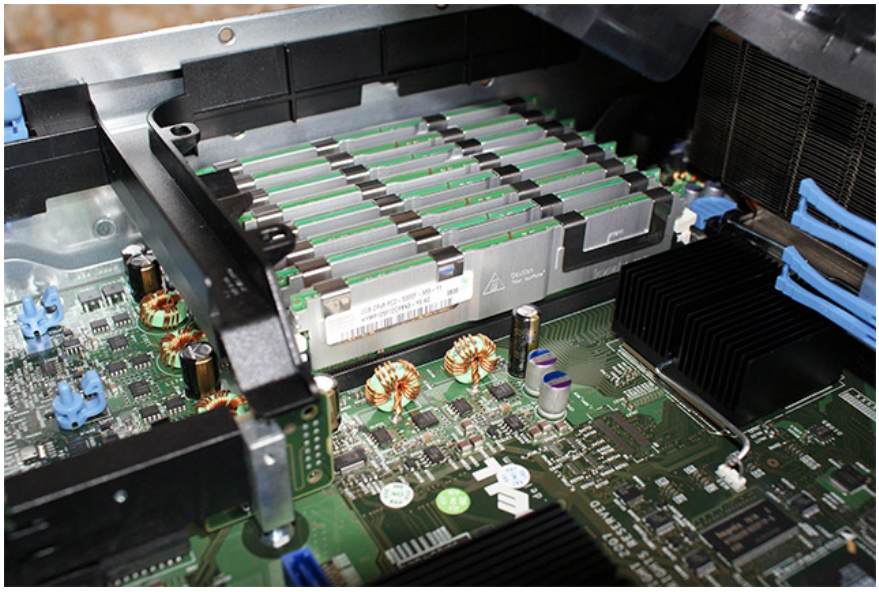
Understanding the types of computer RAM, the server may be a very familiar and boring topic for us.In fact, computer RAM types are often not a topic that gets much attention, instead, users are often more interested in things like CPU specifications or hard drive parameters.However, understanding the knowledge of computer memory types will be an indispensable part in choosing to buy as well as ensuring your system can operate long term and achieve high performance.

Types of main RAM



Buffered and unbuffered

There are two main types of RAM servers, which are buffered and unbuffered.The biggest difference between these two categories is that the buffered RAM consists of a layer of energy processing to maintain speed.There are unique advantages and disadvantages for each of these types of RAM, so consider each option to capture additional information.

RAM buffered, also known as ECC UDIMM, is a type of RAM that adds ECC with self-test and error correction.The main advantage of buffered memory is in the buffer.A buffer is a processing chip that receives information directly from the CPU.This buffer chip then sends the information processed by other chips on the

memory card.This allows the CPU to send information to a target instead of sending information to individual chips on RAM.A typical 10600 RAM will have about 18 buffer chips, so by being equipped with a buffer, the CPU will optimize the path system to send information to.

Unbuffered RAM or ECC UDIMM is also the type of RAM that is added ECC function with self-test and error correction function.RAM ECC UDIMM is memory with no buffers or registers designed on the memory module but instead, these devices are designed on the motherboard.Ram ECC UDIMM has memory access commands that are fed directly to the memory module faster than ECC RDIMM because it is not sent indirectly via the register.

In systems using unbuffered RAM, the CPU will communicate directly with individual memory chips, so sending information will be processed to each chip in the RAM.Although this allows the system to be a bit more scalable and a bit more flexible, it also requires the CPU to have better processing power, and therefore, will have less space to CPU. perform other tasks.

Types of buffered RAM

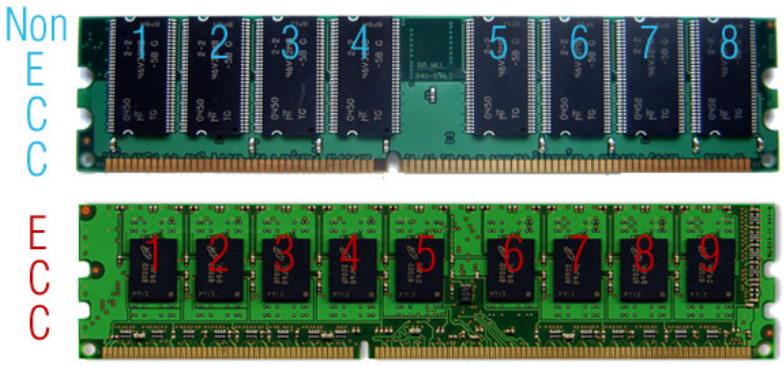
Registered RAM: RAM Registered or ECC RDIMM is memory containing registers, and unbuffered Ram EC Ram is memory with no buffers or registers that are designed on the motherboard.For that reason, the difference between these two ECC ram types lies in the access command.For RAM ECC UDIMM, memory access commands are directed to the memory module, while RAM ECC RDIMM access commands are sent to the previous register and then transferred to the memory module.

RAM Fully Buffered: Also known as FB-DIMM is a ram production technology whose goal is to serve server development by increasing the maximum speed based on ram server technology (DIMM-ECC) old and maximizes stability, compatibility, and most importantly, the ability to check and correct Error Checking and Correction errors.This type of RAM is essentially an older version of RAM Registered.The drawback of FB-DIMM is to run hotter than regular DDR2 ram.The cause is heat treatment from AMB.Therefore FB-DIMM has its own drawbacks.Choosing and buying FB-DIMM is an easy problem.FB-DIMM technology was born in late 2006. At that time, 512MB FB-DIMM bar cost more than 1000USD and the largest bar was 1GB.This shows that the level and quality of FB-DIMM compared to normal RAM.Today, FB-DIMM is relatively popular outside the school and with the price is also very pleasant.Speed ??up to 800-PC6400 and the largest bar is 4GB.As one of the tech lovers, we should choose FB-DIMM to equip our machine room.

RAM Load Reduced: Load Reduced RAM (LRDIMM) is a newer version of RAM buffered.The advantage of Load Reduced modules will sometimes not allow all DIMM slots to be filled with quadratic memory modules.In addition, it will address some of the performance and power issues that RAM FB-DIMM causes during the transition from serial to parallel signal.

Types of RAM FB-DIMM and LRDIMM are designed in slightly different ways than RDIMM RAM and will not be interchangeable on all boards.

What is ECC RAM (RAM server)?



An ECC RAM bar is a RAM that can control the flow of incoming and outgoing data.During data processing CPU will not process on ROM but handle all on RAM.Therefore, for a normal RAM (non-ecc RAM), during high-speed signal transmission, it is easy to cause a crash.And when conflicts occur, the RAM often has to reload the entire data stream because they are unable to manage the flow of data.For ECC RAM, when a conflict occurs, they only need to ask the system to resend the correct packet.Therefore, Ram ECC has very high stability and performance.All RAM for servers requires the most benefit of having ECC.

ECC RAM tends to be more stable and reliable than regular RAM types, but there are some exceptions.Of course, you will always be able to encounter situations where all the most reliable technologies will fail, but with these reliable technologies you will see a much lower failure rate, particularly in This is when using ECC RAM compared to normal RAM.

However, there are some disadvantages of using ECC RAM, although not too serious must be considered carefully.First, ECC RAM will be a bit slower than traditional RAM, especially in fixing errors and checking all data that has gone through it.Another drawback that you will face when using ECC RAM is the higher cost of use.Of course, as mentioned above, with the advantages it brings, it certainly will not have the same price as the normal RAM.

Do you need ECC RAM?

If you are using and managing a high-performance computer, such as a server, the answer is yes.Usually the factor that makes you want to choose ECC RAM instead of non-ECC is the reliability and integrity of the data it brings.As mentioned above, price is also a factor to consider. ECC RAM will cost a bit higher than normal RAM, but for something as important as a server or for a desktop computer to work. At a high level, this early word is well worth it.It takes a bit more money to get back a system with high performance for a long time without the risk of facing problems (such as lost data, faulty programs or reduce operating time .) what crime does not invest!

Practical examples

The best way to really understand the differences between different memory types is to see an example in practice.In this case, our object will be the Apple Mac Pro, one of the most popular high-end computers on the market.

When the Mac Pro debuted for the first time, because it used Intel's server-class components, the only possible option was to use FB-DIMM, which is a great choice of performance at the time. But unfortunately, the price is higher than a conventional ECC option.

When the Mac Pro became stable and became a big name in Apple product lines, the manufacturer also thought of replacing it with ECC RAM.Mac Pro 5.1 was released in 2010 as a product that marked the use of ECC memory on Apple Macs.This is a big improvement for both Apple and consumers because this means they will now own a device with better performance at a more economical price.

Speed ??of RAM through each generation

First of all, what we need to talk about is DDR.DDR is a double data rate - Double Data Rate, which transmits two blocks of data in one clock.Thus DDR memory has twice the data transfer rate compared to those with the same clock speed but without this feature (called SDRAM memory, is no longer used for PC).Since DDR launched it has gone through several generations of DDR, DDR2, DDR3 and now DDR4.Different generations of this memory will also have different speeds.

Speed ??of DDR2 RAM

DDR2 was released in 2003 and at that time it had a maximum transfer rate of 3200MB / s.Over time, DDR2 transfer rates also improved gradually to 4200, 5300 and even 6400MB / s.At that time, there was an industry standard name combining the transfer rate and the type of RAM.PC2-5300 is the most commonly used type of DDR2 RAM.It is even still used on many server systems and you can still buy to equip older computer systems.

Speed ??of DDR3 RAM

DDR3 emerged in 2007 as a bright name for older DDR2 at a higher speed.There are speed measurements other than maximum transmission rates, such as data rates, measured in MT / s as well as I / O bus clocks, but for simplicity, we will still use Maximum transfer rate.Since the launch DDR3 has a transfer rate of 6400MB / s, but it is better known at 8500MB / s, 10600MB / s and 12800MB / s.This is the most widely used speed although it

also has 14900MB / s and even 17000MB / s PC-3.

Speed ??of DDR4 RAM

In 2012, JEDEC, a company that monitors specifications for uniformity, has set standards for DDR4 RAM.With the new DDR4 memory, we will get the highest transfer speeds from 12800, 14900, 17000 to 19200MB / s.

For each new generation of RAM, we get the difference in the design of connection slots, which is a slot to ensure the memory module type being used is appropriate.Therefore, the choice and use of DDR RAM generations must be considered and considered carefully to avoid incompatibilities.

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