

one of the drawback of LP and SP, is opening and closing of TCP connections every single time.

one of the drawback of WS is missing to close stale TCP connections (lets say any connection left stale, this TCP connection would be in the opened state which eats up our memory and takes one extra port, this would impact in Large scale systems like whatsapp, instagram etc)

17 11 2020

Stream Socket (SOCK_STREAM):

Connection Oriented, uses TCP/IP. IP is responsible for data routing and not for data Integrity. Ensures the data sent to be error free and complete and in same order as it was sent!!

Tenet uses the Stream Sockets.

Datagram Socket (SOCK_DGRAM):

Connectionless sockets. Uses UDP. Not reliable. Packet May/May not reach but if reached, will be error free. Uses IP for routing.

Used when TCP stack is either not available or few dropped packets doesn't harm (like Video conferencing, Movies etc)

Few applications like tfpt (trivial file transfer protocol) uses the UDP, but on top of that they have their own protocols to ensure the data integrity. File transfer doesn't need an open connection everytime and when the connection is available, next packet can be sent.

Big Endian (*Network Byte Order*) and Little Endian

Big Endian Byte Order: The most significant byte (the "big end") of the data is placed at the byte with the lowest address. The rest of the data is placed in order in the next three bytes in memory.

Little Endian Byte Order: The least significant byte (the "little end") of the data is placed at the byte with the lowest address. The rest of the data is placed in order in the next three bytes in memory.

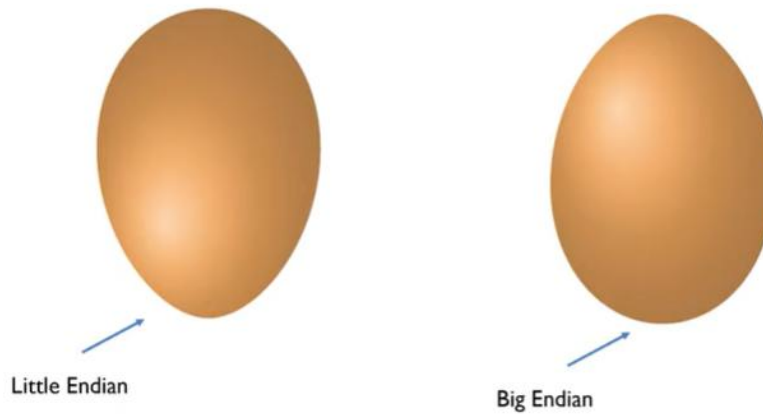
In these definitions, the data, a 32-bit pattern, is regarded as a 32-bit unsigned integer. The "most significant" byte is the one for the largest powers of two: 2³¹, ..., 2²⁴. The "least significant" byte is the one for the smallest powers of two: 2⁷, ..., 2⁰.

For example, say that the 32-bit pattern 0x12345678 is stored at address 0x00400000. The most significant byte is 0x12; the least significant is 0x78.

Apis (htons, ntohs) available for conversion to and from network to host byte orders.



Which end do you break to eat a boiled egg?



Byte-Addressable Memory

- ▶ Each **byte** has a unique address.
- ▶ Address of a multi-byte object
= **Lowest** address of all bytes it contains

Address (Base 16)	Contents (Base 2)
⋮	⋮
0x20000007	01110010
0x20000006	00100101
0x20000005	11100010
0x20000004	10000100
0x20000003	01100001
0x20000002	10001111
0x20000001	00010010
0x20000000	10010100
⋮	⋮

8 bits

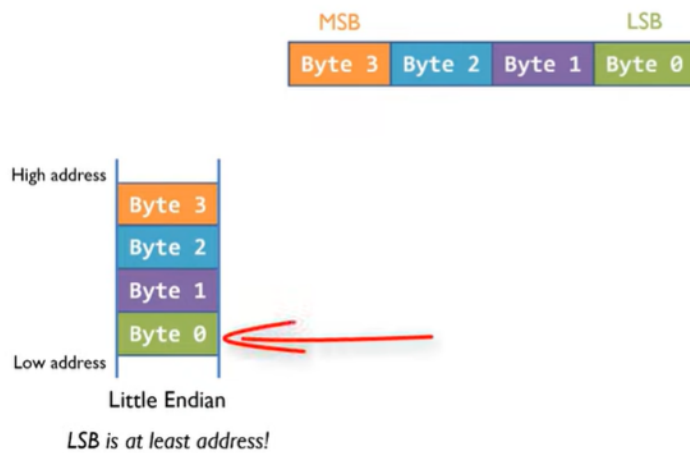
Byte Order

Address	Contents
⋮	⋮
0x20000003	0x04
0x20000002	0x03
0x20000001	0x02
0x20000000	0x01
⋮	⋮

8 bits

- ▶ Word stored at 0x20000000 = ?
- ▶ **0x04030201** or **0x01020304**?
- ▶ Depends on **Endian**.

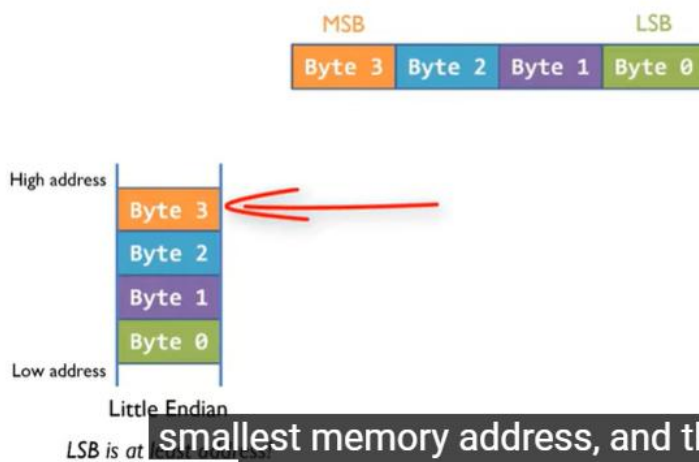
Little Endian vs Big Endian



► 6

In a little-endian computer, the least significant byte of a word is stored at the

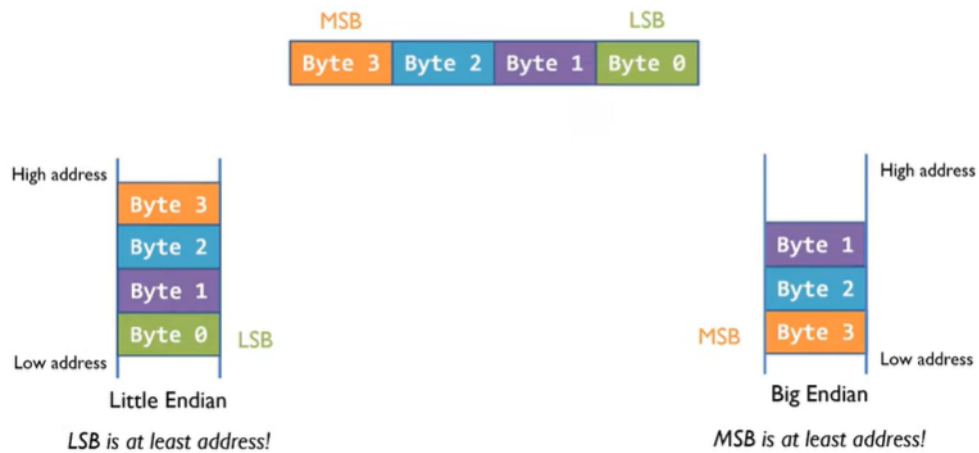
Little Endian vs Big Endian



► 6

smallest memory address, and the most significant byte at the largest.

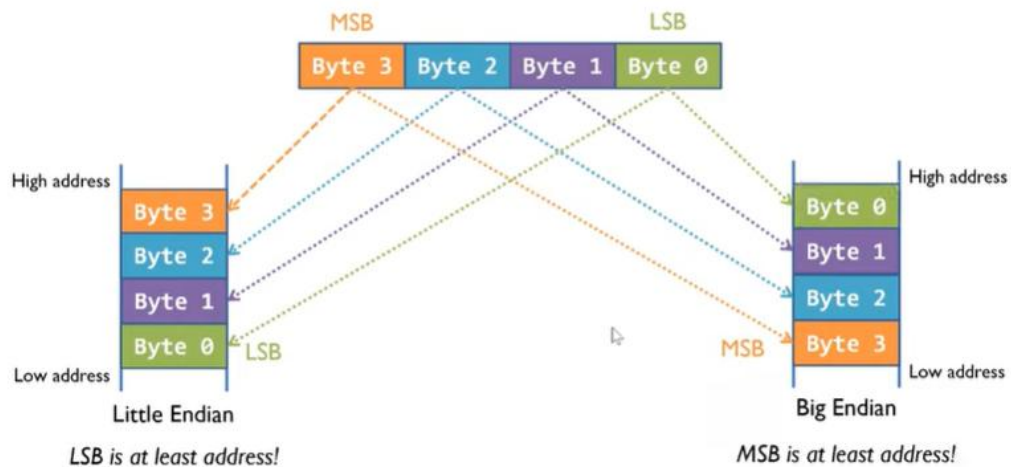
Little Endian vs Big Endian



► 7

A big-endian computer stores the bytes in the opposite order. The most significant byte is

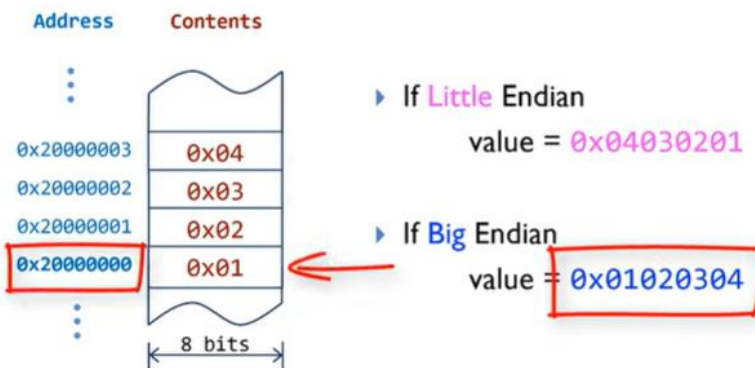
Little Endian vs Big Endian



► 8

For big endian, the Most significant byte (MSB) is stored at the lowest address.

Word stored at 0x20000000?



the value of this word is 01020304 in hex. The most significant byte has the lowest address.

▶ 9

Endian on Modern Architecture

- ▶ Intel x86 and AMD64/x86-64 use little endian.
- ▶ Atmel AVR32 and OpenRISC use big endian.
- ▶ Arm Cortex-M supports both Little Endian and Big Endian. However, endian maybe fixed for specific chips.
 - ▶ ST's L4 Series, TI's Tiva C, and NXP's K64 only supports only Little Endian.

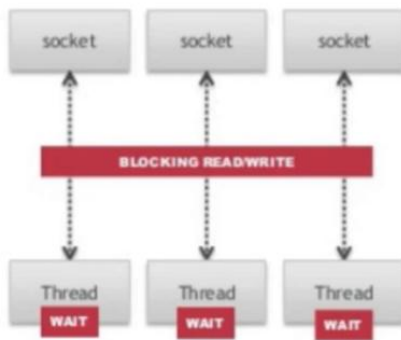


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Which endian is better? In modern computers, some computers use big endian, some use little endian,

Blocking Vs Non blocking socket

IO (blocking)



NIO (non-blocking)

