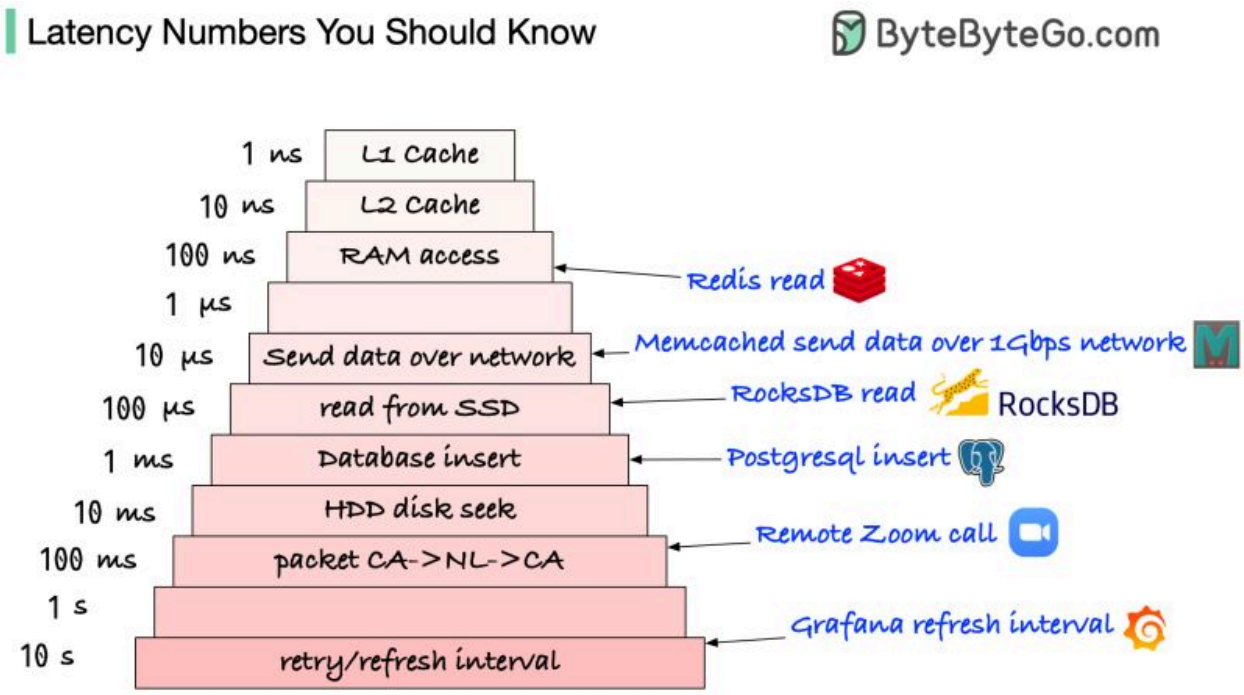
Which latency numbers should you know

Please note those are not precise numbers. They are based on some online benchmarks (Jeff Dean's latency numbers + some other sources).



- L1 and L2 caches: 1 ns, 10 ns

  E.g.: They are usually built onto the microprocessor chip. Unless you work with hardware directly, you probably don't need to worry about them.

- RAM access: 100 ns

  E.g.: It takes around 100 ns to read data from memory. Redis is an in-memory data store, so it takes about 100 ns to read data from Redis.

- Send 1K bytes over 1 Gbps network: 10 us

  E.g.: It takes around 10 us to send 1KB of data from Memcached through the network.

- Read from SSD: 100 us

  E.g.: RocksDB is a disk-based K/V store, so the read latency is around 100 us on SSD.

- Database insert operation: 1 ms.

  E.g.: Postgresql commit might take 1ms. The database needs to store the data, create the index, and flush logs. All these actions take time.

- Send packet CA->Netherlands->CA: 100 ms

  E.g.: If we have a long-distance Zoom call, the latency might be around 100 ms.

- Retry/refresh internal: 1-10s

  E.g: In a monitoring system, the refresh interval is usually set to 5~10 seconds (default value on Grafana).

Notes:

1 ns = 10^-9 seconds

1 us = 10^-6 seconds = 1,000 ns

1 ms = 10^-3 seconds = 1,000 us = 1,000,000 ns