What Is Moore's Law?

Moore's Law refers to Moore's perception that the number of transistors on a microchip doubles every two years, though the cost of computers is halved. Moore's Law states that we can expect the speed and capability of our computers to increase every couple of years, and we will pay less for them. Another tenet of Moore's Law asserts that this growth is exponential.

Understanding Moore's Law

In 1965, Gordon E. Moore—co-founder of Intel (NASDAQ: INTC)—postulated that the number of transistors that can be packed into a given unit of space will double about every two years.1 2 Today, however, the doubling of installed transistors on silicon chips occurs at a pace faster than every two years.3

Background

Gordon Moore did not call his observation "Moore's Law," nor did he set out to create a "law." Moore made that statement based on noticing emerging trends in chip manufacturing at Intel. Eventually, Moore's insight became a prediction, which in turn became the golden rule known as Moore's Law.

Reasons for Limitations

- Temperature increases as power increases.
- Power increases as transistor density increases.
- Voltage scaling reduces (dynamic) power consumption.
- Voltage scaling cannot prevent leakage power loss.
- Voltage scaling is limited due to noise or threshold voltage.