Tech Info Library

Seven-Bit or Eight-Bit ASCII

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Security:       Everyone
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Each character in the ASCII code set is transmitted as a unique eight bit binary code.

The ASCII standard doesn't actually define the eighth bit of the code, so many vendors in the industry have recogized two kinds of ASCII: eight bit ASCII and seven bit ASCII with a parity bit (a transmission-error-detecting scheme).

The first seven bits of a character are the same for seven bit or eight bit ASCII; only the purpose of the eighth bit will change.

Eight bit ASCII has the eighth bit permanently assigned to a constant binary one or zero state.

Seven bit ASCII uses the eighth bit as a parity bit. This means that the eighth bit indicates the odd or even status of the sum of the seven bits in the character.

If the transmitting station has selected seven bit even parity, then for every character in which the sum of the lower seven bits (the real ASCII character) is odd, the transmitting station will make the eighth bit a 1. This makes the sum of all eight bits in the character even.

If the sum of the lower seven bits is already even, the transmitting station will leave the eighth bit a 0 so that the sum of the character will stay even.

The receiving station's equipment will check the sum of each character received to see that it is even. If it isn't, the receiving station's equipment will detect an error in data transmission.

Selecting eight bit ASCII, no parity, causes the transmitting station not to generate parity bits and the receiving station not to check parity. In this case a transmission error would not be detected by the equipment even if one occurred.

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