A great deal of confusion exists over the abbreviations we use for large numbers. In 1998 the International Electrotechnical Commission (IEC) defined a new set of abbreviations for the powers of 2, as shown in Table 4.6. These new terms are endorsed by the Institute of Electrical and Electronics Engineers (IEEE) and International Committee for Weights and Measures (CIPM) in situations where the use of a binary prefix is appropriate. The confusion arises over the fact that the mainstream computer industry, such as Microsoft, Apple, and Dell, continues to use the old terminology. According to the companies that market to consumers, a 1 GHz is 1,000,000,000 Hz but 1 Gbyte of memory is 1,073,741,824 bytes. The correct terminology is to use the SI-decimal abbreviations to represent powers of 10, and the IEC-binary abbreviations to represent powers of 2. The scientific meaning of 2 kilovolts is 2000 volts, but 2 kibibytes is the proper way to specify 2048 bytes. The term **kibibyte** is a contraction of kilo binary byte and is a unit of information or computer storage, abbreviated KiB.

1 KiB = 2^{10} bytes = 1024 bytes
1 MiB = 2^{20} bytes = 1,048,576 bytes
1 GiB = 2^{30} bytes = 1,073,741,824 bytes

These abbreviations can also be used to specify the number of binary bits. The term **kibibit** is a contraction of kilo binary bit, and is a unit of information or computer storage, abbreviated Kibit.

A **mebibyte** (1 MiB is 1,048,576 bytes) is approximately equal to a megabyte (1 MB is 1,000,000 bytes), but mistaking the two has nonetheless led to confusion and even legal disputes. In the engineering community, it is appropriate to use terms that have a clear and unambiguous meaning.

Value	*SI*	*Decimal*	*SI*	*Decimal*	*Value*	*IEC*	*Binary*	*IEC*	*Binary*
1000^1	k		kilo-		1024^1	Ki		kibi-	
1000^2	M		mega-		1024^2	Mi		mebi-	
1000^3	G		giga-		1024^3	Gi		gibi-	
1000^4	T		tera-		1024^4	Ti		tebi-	
1000^5	P		peta-		1024^5	Pi		pebi-	
1000^6	E		exa-		1024^6	Ei		exbi-	
1000^7	Z		zetta-		1024^7	Zi		zebi-	
1000^8	Y		yotta-		1024^8	Yi		yobi-	

Table 4.6. Common abbreviations for large numbers.

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