To: T10 Technical Committee
From: Rob Elliott, HP (elliott@hp.com)
Date: 16 January 2008
Subject: 08-041r1 Use period as decimal separator in T10 standards

Revision history

Revision 0 (2 January 2008) First revision
Revision 1 (16 January 2008) Incorporated comments from January SAS protocol WG - expanded to propose for all T10 standards, not just SAS-2.

Related documents

sas2r13 - Serial Attached SCSI - 2 (SAS-2) revision 13
T10/05-085r9 T10 Editor's Style Guide (George Penokie, IBM)
T11/07-410v1 Rules for decimal demarcations for T11 standards (Bob Snively, Brocade)
Wikipedia article on "Decimal separator" at http://en.wikipedia.org/wiki/Decimal_separator
Resolution 10 of the 22nd CGPM (2003) (General Conference on Weights and Measurements) at http://www.bipm.org/jsp/en/ViewCGPMResolution.jsp?CGPM=22&RES=10
"Decimals Score a Point in International Standards" by NIST (November 2006) at http://www.nist.gov/public_affairs/techbeat/tb2006_1122.htm#decimal

Proposal

Since T10 standards are in English, they should use English conventions for numbers:

a) decimal separator: period (change from comma)
b) thousands separator: space (as is). Use on both sides of the decimal separator.

Background

1. The international organization that defines SI units recommends:

a) thousands separator: space; and
b) decimal separator for English language versions of its own publications: period.

That was most recently declared in Resolution 10 of the 22nd CGPM (2003). T11/07-410v1 quotes the ISO editor replying with this excerpt when asked if ISO will support periods:

> "The 22nd General Conference,
>
> **considering** that
>
> - a principal purpose of the International System of Units (SI) is to enable values of quantities to be expressed in a manner that can be readily understood throughout the world,
> - the value of a quantity is normally expressed as a number times a unit,
> - often the number in the expression of the value of a quantity contains multiple digits with an integral part and a decimal part,
> - in Resolution 7 of the 9th General Conference, 1948, it is stated that "In numbers, the comma (French practice) or the dot (British practice) is used only to separate the integral part of numbers from the decimal part",
> - following a decision of the International Committee made at its 86th meeting (1997), the International Bureau of Weights and Measures now uses the dot (point on the line) as the decimal marker in all the English language versions of its publications, including the English text of the SI Brochure (the definitive international reference on the SI), with the comma (on the line) remaining the decimal marker in all of its French language publications,
> - however, some international bodies use the comma on the line as the decimal marker in their English language documents,
> - furthermore, some international bodies, including some international standards organizations, specify the decimal marker to be the comma on the line in all languages,
> - the prescription of the comma on the line as the decimal marker is in many languages in conflict with the customary usage of the point on the line as the decimal marker in those languages,
> - in some languages that are native to more than one country, either the point on the line or the comma on the line is used as the decimal marker depending on the country, while in some countries

with more than one native language, either the point on the line or comma on the line is used depending on the language,

declares that the symbol for the decimal marker shall be either the point on the line or the comma on the line,

reaffirms that "Numbers may be divided in groups of three in order to facilitate reading; neither dots nor commas are ever inserted in the spaces between groups", as stated in Resolution 7 of the 9th CGPM, 1948."

2. NIST reports that ISO is planning to allowing periods. See "Decimals Score a Point in International Standards" (November 2006) (quoted by T11/07-410v1).

3. Other committees use periods rather than decimals (most use the American style with comma as the thousands separator, which SI discourages):

a) T11 (Fibre Channel) recently decided to adopt what FC-FS-2 calls "ISO/British" style (see T11/07-410v1).
b) T13 (ATA) uses American style.
c) SFF specifications referenced by SAS mostly use American style:
   A) Mini SAS connectors (SFF-8086, 8087, 8088) use American style
   B) SAS 4i connector (SFF-8484) and 4x (SFF-8470) use American style
   C) SAS Drive connector (SFF-8482) uses American style
   D) Form factors (SFF-8223, 8323, 8523) use American style
   E) Serial GPIO (SFF-8485) uses ISO style, but is open for revision right now
d) IEEE requires space for thousands and period for decimal (even for standards targeted for ISO)
e) Serial ATA, PCI SIG, USB, InfiniBand, and JEDEC all use American style

Suggested changes to SAS-2 (Make similar changes to all other standards)

3.4 Editorial conventions

...

~~This standard uses the ISO convention for representing decimal numbers (e.g., the thousands and higher multiples are separated by a space, and a comma is used as the decimal point).~~ This standard uses the following conventions for representing decimal numbers:

a) the decimal separator (i.e., separating the integer and fractional portions of the number) is a period;
b) the thousands separator (i.e., separating groups of three digits in a portion of the number) is a space; and
c) the thousands separator is used in both the integer portion and the fraction portion of a number.

Table 1 shows some examples of decimal numbers using ~~the ISO and American~~various numbering conventions.

Table 1 — ~~ISO and American numbering~~Numbering conventions

~~ISO~~French	~~American~~English	This standard (new column)
0,6	0.6	0.6
3,141 592 65	3.14159265	3.141 592 65
1 000	1,000	1 000
1 323 462,95	1,323,462.95	1 323 462.95

A decimal number represented in this standard with an overline over one or more digits following the decimal point is a number where the overlined digits are infinitely repeating (e.g., 666~~,~~.$\overline{6}$ means 666~~,~~.666 666... or 666 2/3, and 12.$\overline{142\ 857}$ means 12.142 857 142 857... or 12 1/7).

Editor's Note 1: Change all text and figures in the standard. A search on the regular expression

[0-9],[0-9] should find them. Non-blocking spaces should be used as the thousands separator.