

DICOM Correction Item

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| Correction Number CP-432 | |
| Log Summary: UTC Synchronization Frame of Reference | |
| Type of Modification Addition | Name of Standard PS 3.3, PS3.6 |
| <p>Rationale for Correction:</p> <p>The system of Universal Coordinated Time (UTC) can be construed as a well-known Synchronization Frame of Reference. UTC can be distributed by several mechanisms, the most widespread of which is NTP/SNTP.</p> <p>It would be useful for applications to have a well-known Synchronization Frame of Reference UID to be used when the time values in SOP Instances are synchronized to UTC. This CP assigns such a UID.</p> <p>It is further useful for applications to report the identity of the proximate NTP server. This provides an indirect measure of the error of the time, as a pair of NTP clients operating on the same network segment as their NTP server can achieve time errors less than 10 ms.</p> | |
| <p>Sections of documents affected</p> <p>PS 3.3 Section C.7.4.2</p> <p>PS3.6 Annex A</p> | |
| Correction Wording: | |

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| Modify Part 3, Table C.7.4.2-1 |
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|----------------------------------|---------------------------|-----------------|---|
| Time Distribution Protocol | (0018,1802) | 3 | <p>Method of time distribution used to synchronize this equipment.</p> <p>Defined Terms:</p> <p>NTP - Network Time Protocol IRIG - InterRange Instrumentation Group GPS - Global Positioning System SNTP – Simple Network Time Protocol</p> |
| <u>NTP Source Address</u> | <u>(0018,1803)</u> | <u>3</u> | <p><u>IP Address of NTP time source. IPv4 addresses shall be in dotted decimal (e.g. 192.168.1.1). The IPv6 addresses shall be in colon separated hexadecimal (e.g. 12:34:56:78:9a:bc:de:f0).</u></p> <p><u>Note: Identity of this value in two instances acquired contemporaneously implies a common time base. The NTP Source Address may not persist over time.</u></p> |

Modify Part 3, Section C.7.4.2.1.1

C.7.4.2.1.1 Synchronization Frame of Reference UID

A set of equipment may share a common acquisition synchronization environment, which is identified by a Synchronization Frame of Reference UID. All SOP Instances that share the same Synchronization Frame of Reference UID shall be temporally related to each other. If a Synchronization Frame of Reference UID is present, all SOP Instances in the Series must share the same Frame of Reference.

The UTC Synchronization UID, 1.2.840.10008.15.1.1, may be used when the equipment is synchronized to the international standard UTC. In this case the quality of synchronization may be determined by means of the Time Distribution Protocol (0018,1802) and NTP Source Address (0018,1803).

C.7.4.2.1.2 Time Source and Time Distribution Protocol

Time may originate with a primary source (e.g., a national standards bureau) and be distributed through a chain of secondary distribution systems until reaching the imaging equipment. Time Distribution Protocol (0018,1802) specifies the immediate (last link) method used by the equipment to receive time from the immediately prior Time Source (0018,1801). It does not specify the ultimate time reference from which the Time Source may derive its synchronization.

Note: The time value distributed through the specified Time Distribution Protocol may need to be corrected to align with UTC. For example, GPS does not compensate for leap seconds.

Add to Part 6, Section 6

(0018,1803) NTP Source Address LO 1

Add to Part 6, Table A-1

| UID Value | UID NAME | UID TYPE | Part |
|-----------------------------|-----------------------------------|---|---------------|
| <u>1.2.840.10008.15.1.1</u> | <u>Universal Coordinated Time</u> | <u>Synchronization Frame of Reference</u> | <u>PS 3.3</u> |