

An update on recent GPS timing issues:

- a) June 2015 leap second
- b) January 26, 2016 error

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Motivation

Leap Second:

- ▶ Periodically, leap seconds are added to the clock to account for variations in the earth's rotation
- ▶ The most recent leap second was added June 30, 2015
- ▶ The sequence of dates of the UTC second markers were:
 - 2015 June 30, 23h 59m 59s
 - 2015 June 30, 23h 59m 60s
 - 2015 July 1, 0h 0m 0s
- ▶ Some satellite clocks were susceptible to error

January 26, 2016 glitch:

- ▶ Additionally, some clocks experienced issues associated with an unexpected glitch that occurred earlier this year



Process / Summary Results

- ▶ Prior to the June 30 leap second, the NASPI community was asked to be on the lookout for proper operation of the satellite clocks during the leap second transition
- ▶ Several reports of issues were collected
 - Including many reports indicating no adverse issues were observed
- ▶ The general conclusion is that if the GPS clock had the latest firmware, there were few problems associated with the leap second transition
- ▶ NIST also published a technical report documenting lessons learned
- ▶ Several reports were received following the January 26, 2016 glitch
 - Due to the small magnitude of the error, the only consequences observed were loss of time synchronization alarms. There were no significant impacts in terms of measurement error and/or operational impacts.



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