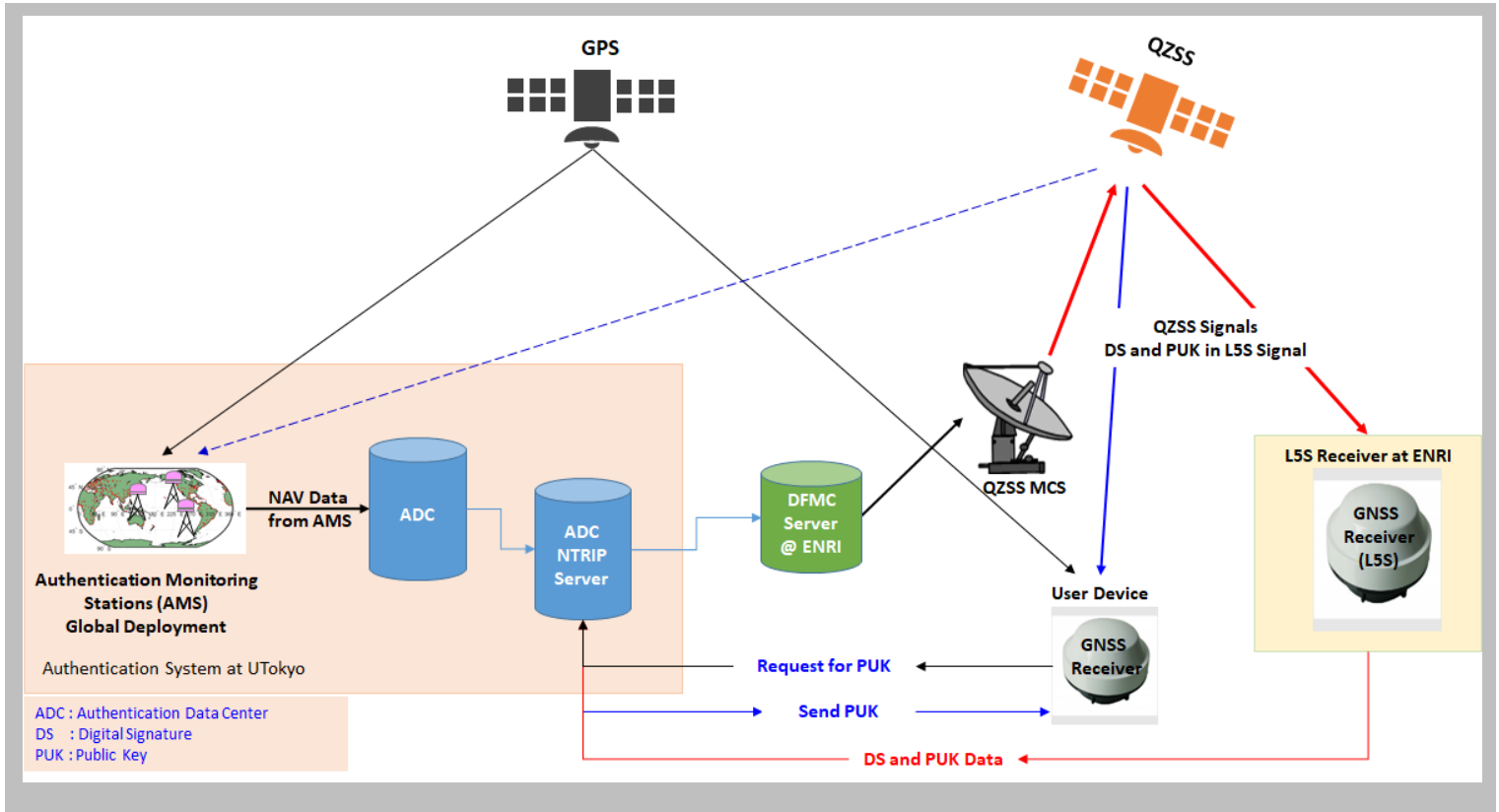


QZSS L1C/A Signal Authentication using SBAS L5S Signal

SBAS L5S信号を使用したQZSS L1C / A信号認証

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 Takayasu SAKAI and Mitsunori KITAMURA, ENRI

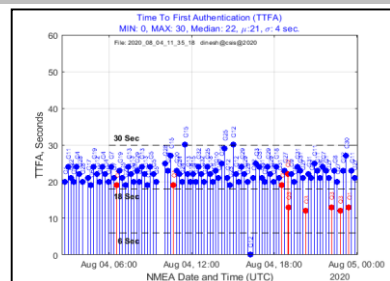


The above figure shows the system architecture to authenticate QZSS and GPS L1C/A navigation message by using QZSS L5S signal.

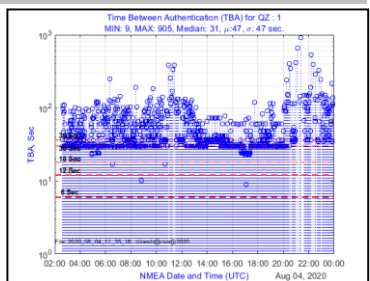
A Digital Signature (DS) is generated from the navigation message of L1C/A signal that are visible at AMS. During the DS data generation process, private and public key pairs are also generated at ADC. DS data are broadcasted using QZSS L5S signal. Public key pairs are broadcasted either from the QZSS satellite signal or through other means, such as from ADC NTRIP server at UTokyo.

Field tests have been conducted by broadcasting authentication test signals from QZSS satellites by using L5S signals to study signal authentication Key Performance Indicators (KPI). Some of the KPIs are shown here.

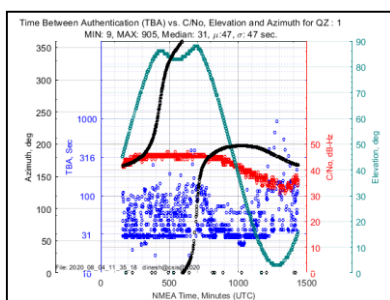
KPI	Value (seconds) for QZSS-01	
TTFA Time To First Authentication	Min: 8 Max: 30	Median: 22 Mean : 21
TBA Time Between Authentication	Min: 9 Max: 905	Median: 31 Mean : 47
TBSA Time Between Subsequent Authentication	Min: 0 Max: 24	Median: 0 Mean : 3



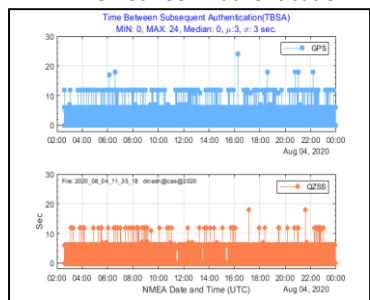
TTFA: Time To First Authentication



TBA: Time Between Authentication



TBA: Time Between Authentication vs. C/N0, Elevation and Azimuth



TBSA : Time Between Subsequent Authentication for GPS and QZSS

