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| Scope of Activity | ​1) Standardization ofrelevant data formats for delivery of telemetry frames, telecommand data, ground station monitor data and radiometric data suitable for use in a cloud computing environment.2) Leveraging of existing CCSDS data format/PDU (protocol data units) such as SLE to the extent possible.3) Cloud friendly/modern encoding schemes that preserve the content of leveraged CCSDS Standards for the above datatypes, including metadata4) Messages suitable for stream delivery and file delivery5)Identify and define considerations for mission operations centers to utilize the standards with cloud providers6) Identify and define consideration for ground stations to utilize the standards with cloud providers7) Cybersecurity considerations, in consultation with SE Security WGIt should be noted that the scope of activity regarding telemetry is strictly at the level of providing delivery of telemetry frames; extraction of telemetry packets and any subsequent processing is out of scope for this activity.​ |
| Rationale for Activity | Point-to-Point Data Delivery: SLE is limited to point-to-point data delivery, requiring separate instances for routing to different destinations. Scaling becomes challenging, prompting exploration of alternative solutions like cloud-based storage and processing Troubleshooting Challenges: SLE bind operation time-consuming during early mission test and checkout. Resolving agency firewall and implementation issues is a hidden expense. Cloud computing's omnipresent context can potentially eliminate such issues. ASN.1 Compiler: SLE mandates the purchase or licensing of an ASN.1 compiler, posing a significant cost for missions, especially those with limited budgets. Modern encoding techniques in a cloud environment could negate the need for a specialized compiler. Outdated Model and Workforce Challenges: The SLE model is outdated, potentially hindering recruitment of qualified personnel Today's graduates are more knowledgeable about cloud computing, with dedicated courses and degree programs available. Cost and Scalability Issues: SLE can be expensive for TT&C providers to scale for emerging missions with high data volumes. Cloud computing provides rapid scalability, making it a cost-effective solution for increasing processing, storage, and bandwidth capacities. |
| Goals | Produce efficient, flexible standards in line with current industry practices. Leveraging existing CCSDS to promote the good work already done for industry adoption consideration and minimize CDDS WG standards development time. Provide harmonized access and data delivery for cloud-based mission to agency (and commercial) ground stations. |
| Survey of Similar Standards Efforts Undertaken inOther Bodies and elsewhere in CCSDS | CCSDS has investigated cloud-based prototyping in general and concluded that it is a worthwhile approach. |
| Patent Licensing Applicability for Future Standards | None. Open-source technologies will be given priority regarding standards development.   |
| Technical Risk Mitigation Strategy | Encoding technology continues to evolve and therefore has an inherent obsolescence risk. The mitigation is to maintain an abstract encoding model and be prepared to adopt alternate technologies if needed. |
| Management Risk Mitigation Strategy | Risk: Running behind schedule Mitigation: more resources, request industry participation Risk: proper cyber-security definitions Mitigation: involve security WG |