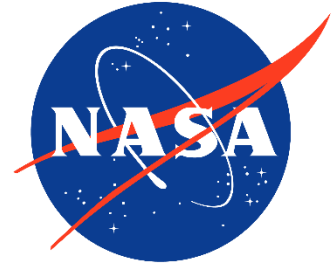**Packet Dissector Task**
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NASA Internship Summer 2021
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13 August 2021

Abstract

I worked as a National Aeronautics and Space Administration (NASA) Office of Science, Technology, Engineering, and Math (OSTEM) intern in the NE-XS branch under the mentorship of Stephen Aument, Elijah Spiro, and Jill Giles during the summer of 2021. In collaboration with another NASA OSTEM intern Alan Lu I developed a custom packet dissector plugin for network traffic packets containing measurement data.

Alan and I added the custom dissector plugin to a commercial off-the-shelf (COTS) network analysis tool that intercepts traffic as it flows between a server and a client and performs basic analysis on the packets that it receives in a process called *dissection*. Dissectors for basic packet-encoding protocols such as Transmission Control Protocol (TCP) come default with the COTS tool, but the tool also allows users to create their own dissector plugins for lesser-used or custom protocols, like the ones used at Kennedy Space Center (KSC). Currently, measurement data flowing over KSC's network is encoded at the source and decoded at the end of the connection, with no way to double-check the results of either the initial encoding or the final decoding. With a custom dissector plugin designed to decode the measurement packets flowing through the network, engineers can use the COTS tool to manually verify the encoding and decoding of critical information.

At the beginning of the project, Alan and I worked to familiarize ourselves with existing custom packet dissector plugins. We were provided with several examples of other KSC packet dissector plugins, as well as a skeleton of the plugin we were trying to build (a project initiated by a previous team of interns). We spent the remainder of our internship fleshing out the code, resolving bugs, and developing an intuitive user interface for the resulting decoded packets. We then released our dissector plugin to be vetted and stress-tested by the team of engineers who will later use it. Once reviewed, tested, and integrated into the COTS tool, our addition will allow KSC employees to verify the data they receive on the network, facilitate troubleshooting, and help build trust in the system.

Acknowledgements