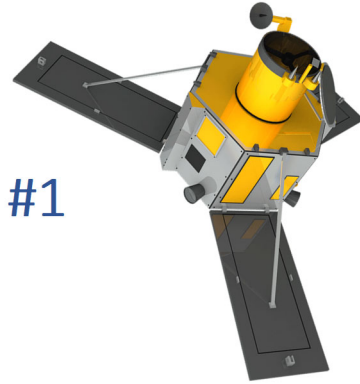


Aerospace Village

Deep Space Networking Challenge #1



Authors: Laura Chappell, Chappell University
Ginny Spicer, Chappell University

Trace File: *tcpcl_we2ereceipt.pcap*

Howdy folks! Is there anything cooler than interplanetary communications? We just don't think so! In November 2007, Scott Burleigh and Keith Scott released the Bundle Protocol Specification in RFC 5050. The Bundle Protocol runs on top of the TCP Convergence Layer Protocol (RFC 7242).

Use the *tcpcl_we2ereceipt.pcap* trace file to answer the following questions. Need help? Watch the video at <https://youtu.be/u9pyeMaRDYo> and download the *Aerospace Village - Workshop 2 Chappell_Steps and Hints.pdf* file.

It can be a real bear to analyze the traffic due to the fact that traffic running over the Bundle protocol can be split into multiple Bundle segments which, in turn, can be split up into separate TCP segments. Wireshark's TCP reassemble preference setting screws up the view a bit – placing the heading details at the end of reassembled Bundle segments and TCP segments. The video referenced above details the Bundle segmentation and TCP segmentation in this trace file.

Using *tcpcl_we2ereceipt.pcap*, answer the following questions.

1. What is inside the payload sent using the Bundle protocol? (Summarize)
2. What TCPCL Packet Types are seen in this trace file?
3. What display filter displays all packets containing a TCP Convergence Layer header?
4. What display filter displays all Start-of-Bundle packets?
5. What display filter displays all End-of-Bundle packets?
6. What display filter displays all ACKs for delivered bundles?
7. Sketch out a diagram depicting the devices communicating via the Bundle protocol and the path of the data transfer.

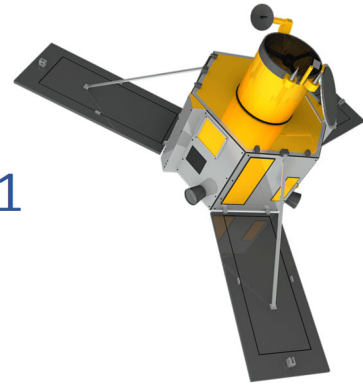
Answers are located on the next page.

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Answers

- 1. What is inside the payload sent using the Bundle protocol? (Summarize)**
The payload includes a request to “List available commands” and the commands list.
- 2. What TCPCL Packet Types are seen in this trace file?**
Keepalives, Data, ACK
- 3. What display filter displays all packets containing a TCP Convergence Layer header?**
`tcpcl`
- 4. What display filter displays all Start-of-Bundle packets?**
`tcpcl.data.proc.start == 1`
- 5. What display filter displays all End-of-Bundle packets?**
`tcpcl.data.proc.end == 0`
- 6. What display filter displays all ACKs for delivered bundles?**
`bundle.admin.status.delivered == 1`
- 7. Sketch out a diagram depicting the devices communicating via the Bundle protocol and the path of the data transfer.**

