Evaluation of PlantPulse

The evaluation consisted of four different scenarios with different payloads and time intervals. The timestamps were gathered from Pico W (sender) and Google Firebase cloud database (receiver) and the latencies were calculated manually.

1. Scenario

Sending all three sensor readings every 10 seconds and calculating latency between sending data from pico w and receiving them in the cloud database:

Sent: 12:55:02:624 _____ Received: 12:55:03:299 _____ Latency: 675ms
Sent: 12:55:12:652 _____ Received: 12:55:13:324 _____ Latency: 672 ms
Sent: 12:55:22:679 _____ Received: 12:55:23:344 _____ Latency: 665ms
Sent: 12:55:32:705 _____ Received: 12:55:33:388 _____ Latency: 683ms
Sent: 12:55:42:733 _____ Received: 12:55:43:406 _____ Latency: 673ms
Sent: 12:55:52:760 _____ Received: 12:55:53:428 _____ Latency: 668ms

2. Scenario

Sending all three sensor readings every second and calculating latency between sending data from pico w and receiving them in the cloud database:

Sent: 13:35:34:803 _____ Received: 13:35:35:463 _____ Latency: 660ms
Sent: 13:35:35:826 _____ Received: 13:35:36:500 _____ Latency: 674ms
Sent: 13:35:36:850 _____ Received: 13:35:37:577 _____ Latency: 727ms
Sent: 13:35:37:874 _____ Received: 13:35:38:534 _____ Latency: 660ms
Sent: 13:35:38:896 _____ Received: 13:35:39:613 _____ Latency: 717ms
Sent: 13:35:39:919 _____ Received: 13:35:40:586 _____ Latency: 667ms

3. Scenario

Sending only one value (TEMPERATURE) every 10 seconds from pico w and receiving it in the cloud database:

Temperature Sent: 13:48:07:298 _____ Received: 13:48:07:501 _____ Latency: 203ms
Temperature Sent: 13:48:17:320 _____ Received: 13:48:17:463 _____ Latency: 143ms
Temperature Sent: 13:48:27:343 _____ Received: 13:48:27:484 _____ Latency: 141ms
Temperature Sent: 13:48:37:367 _____ Received: 13:48:37:509 _____ Latency: 142ms
Temperature Sent: 13:48:47:388 _____ Received: 13:48:47:528 _____ Latency: 140ms

4. Scenario

Sending individual values one by one every 5 seconds from pico w and receiving them in the cloud database:

Temperature: Sent: 14:02:51:618 _____ Received: 14:02:51:786 ____ Latency: 168ms
Moisture: Sent: 14:02:56:637 _____ Received: 14:02:56:753 ____ Latency: 116ms
Pressure: Sent: 14:03:01:661 _____ Received: 14:03:01:786 ____ Latency: 125ms

Temperature: Sent: 14:03:06:684 _____ Received: 14:03:06:819 ____ Latency: 135ms
Moisture: Sent: 14:03:11:706 _____ Received: 14:03:11:826 _____ Latency: 120ms
Pressure: Sent: 14:03:16:726 _____ Received: 14:03:16:859 _____ Latency: 133ms

Temperature: Sent: 14:03:21:749 _____ Received: 14:03:21:881 ____ Latency: 132ms
Moisture: Sent: 14:03:26:764 _____ Received: 14:03:26:885 ____ Latency: 121ms
Pressure: Sent: 14:03:31:788 _____ Received: 14:03:31:923 ____ Latency: 135ms

Temperature: Sent: 14:03:36:810 _____ Received: 14:03:36:931 ____ Latency: 121ms
Moisture: Sent: 14:03:41:828 _____ Received: 14:03:41:950 ____ Latency: 122ms
Pressure: Sent: 14:03:46:847 _____ Received: 14:03:46:980 ____ Latency: 133ms

Temperature: Sent: 14:03:51:868 _____ Received: 14:03:52:088 ____ Latency: 220ms
Moisture: Sent: 14:03:56:886 _____ Received: 14:03:57:018 ____ Latency: 132ms
Pressure: Sent: 14:04:01:911 _____ Received: 14:04:02:163 ____ Latency: 252ms

Temperature: Sent: 14:04:06:931 _____ Received: 14:04:07:060 ____ Latency: 129ms
Moisture: Sent: 14:04:11:952 _____ Received: 14:04:12:098 ____ Latency: 146ms
Pressure: Sent: 14:04:16:975 _____ Received: 14:04:17:092 ____ Latency: 117ms