

PACSAT Errors, Telemetry and Logging

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Version: 1.01 – 29 Jun 2023

Errors

Errors.h

ErrorType_t – enum that lists the error codes

struct localErrors – structure that stores the number of errors of each type. Global variable declared in main. (Currently this is defined as rt1_Errors_t in rt1ErrorsDownlink.h

Errors.c

char *ErrMsg[] – list of error names for debug

char * TaskNames[] – list of task name strings for debugging that should (will) match ids in WdReporters_t in watchdogSupport.h

ReportError(ErrorType_t err, bool f, ErrorInfoType_t t, int info) – Report an error of type err, setting the FATAL flag and reporting ErrorInfoType_t with some data stored in or pointed to by the info integer.

Telemetry

Payloads generated from spreadsheet:

[headerDownlink.h](#)

[commonDownlink.h](#)

[rt1ErrorsDownlink.h](#)

[realtimeDownlink.h](#)

[maxDownlink.h](#)

[minDownlink.h](#)

[WodDownlink.h](#)

[downlink.h](#) – Frames assembled from payloads

Logging

ALOG – Activity log

File containing actions performed by the Uplink state machine

BLOG – Broadcast Log

File containing actions performed by the Pacsat Broadcast

ELOG – Error Log

File containing errors. May not be needed

Activity Log: ALOG

Example activity from FalconSat-3 ALOG file and ALOG decoder:

FTL0 Activity Log for Mon Dec 30 00:04:26 2019

Time	Activity	Call	Rx Session
1191230 00:04:26	BCST ON	KC7MG-0 2	f#2bbd dur:0 l:244
1191230 00:04:29	BCST ON	KC7MG-0 2	f#2bbd dur:0 l:244
1191230 00:04:57	ADEL OK	f#2a70 (exp: (5df03753) 1191211 00:24:51)	
1191230 00:05:01	BCST ON	KC7MG-0 2	f#2bbd dur:0 l:244
1191230 00:12:14	BCST ON	AC2CZ-0 2	f#2bca dur:0 l:244
1191230 00:12:18	LOGIN	N8MH-0 2 005668	
1191230 00:12:18	UPLOAD	N8MH-0	f#2bd8 off:0 l#210
1191230 00:12:29	BCST ON	N8MH-0 2	f#2bd5 dur:0 l:244
1191230 00:12:49	BCST ON	N8MH-0 2	f#2bc6 dur:0 l:244
1191230 00:12:52	UPLOAD	N8MH-0	f#2bdb off:0 l#216
1191230 00:12:55	LOGOUT	N8MH-0 005668	user disconnect
1191230 00:13:36	ADEL OK	f#2a63 (exp: (5df05120) 1191211 02:14:56)	
1191230 00:13:38	ADEL OK	f#2a73 (exp: (5df057ed) 1191211 02:43:57)	
1191230 00:14:19	BCST ON	N1RCN-0 2	f#2bd4 dur:0 l:244
1191230 00:14:39	BLOWOFF	N8MH-0	Unexpected input (uplink data)
1191230 00:14:40	LOGOUT	N8MH-0 005670	server disconnect
			Incomplete U/L @ 642 bytes
1191230 00:14:45	ADEL OK	f#2a75 (exp: (5df07888) 1191211 05:03:04)	
1191230 00:14:48	LOGIN	N8MH-0 2 005671	
1191230 00:15:45	BLOWOFF	N8MH-0	Unexpected input (uplink command)
1191230 00:17:53	FREE DISK		14018256 bytes

Activity Log: ALOG

Contains a header and then one line for each ALOG session

```
struct alog_session {
    byte event;
    byte len;
    long timestamp;
    int serial_no;
    byte rx_channel;
    char call[6]; // this is optional and not included in all records
    long vars[6];
};
```

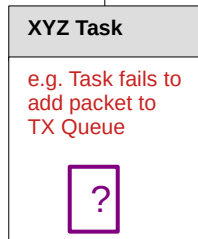
Session Event Ids

```
#define ALOG_FTL0_STARTUP = 1;      /* ftl0 startup */
#define ALOG_FTL0_SHUTDOWN = 2;    /* ftl0 shutdown */
#define ALOG_START_SESSION = 3;    /* user logon */
#define ALOG_CLOSE_SESSION = 4;    /* user logout */
#define ALOG_DISCONNECT = 5;       /* user timedout */
#define ALOG_USER_REFUSED = 6;     /* user refused (max sessions) */
#define ALOG_BCAST_START = 7;      /* added to list */
#define ALOG_BCAST_STOP = 8;       /* removed from list */
#define ALOG_DISKSPACE = 9;        /* free disk space */
#define ALOG_FILE_DELETE = 10;     /* file deleted */
#define ALOG_FILE_DOWNLOAD = 11;   /* file download */
#define ALOG_FILE_UPLOAD = 12;     /* file upload */
#define ALOG_BBS_SHUT = 13;        /* BBS is shut */
#define ALOG_BBS_OPEN = 14;        /* BBS is open */
#define ALOG_DIR = 15;             /* directory request */
#define ALOG_SELECT = 16;          /* Select */
#define ALOG_FILE_REMOVED = 17;    /* Autodelete */
#define ALOG_FILE_NOT_REMOVED = 18; /* Autodelete failed */
#define ALOG_END_DOWNLOAD = 19;    /* End of download */
#define ALOG_END_UPLOAD = 20;      /* End of download */
#define ALOG_END_DIR = 21;         /* end of downloading dir file */
#define ALOG_SELECT_DONE = 22;     /* End of select */
```

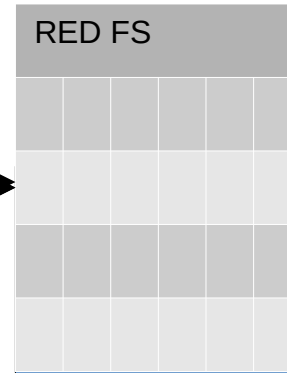
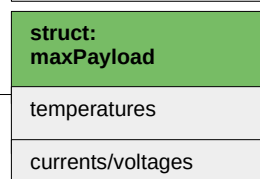
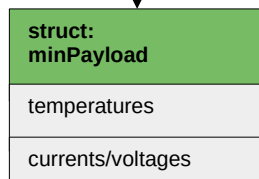
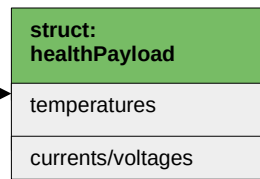
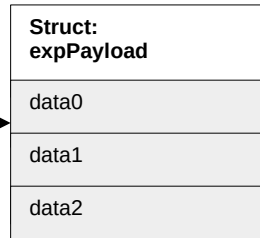
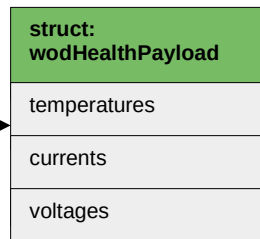
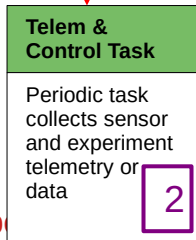
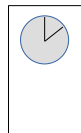
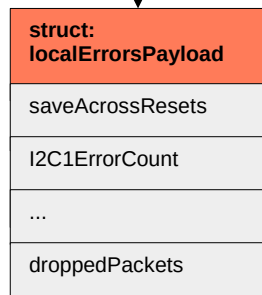
Additional definitions for Errors, Disconnect reasons etc



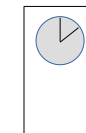
LogActivity (
Call, Session_id, var1, var2, var3)



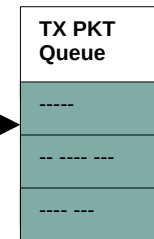
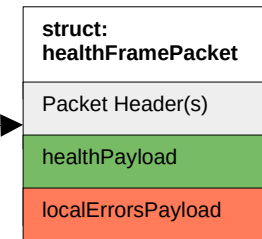
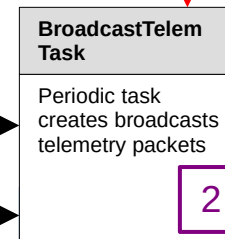
ReportError (
TXPacketDropp
FALSE,
TaskNumber,
PbTaskWD)



WOD, LOG and Experiment Files Broadcast by PB when requested by ground stations



Timing based on mode. e.g. SAFE mode, DATA mode



Key

→ Data

→ RTOS Event

2 RTOS Priority

⌚ RTOS Timer

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Version: 1.00 – 21 Jun 2023

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Key

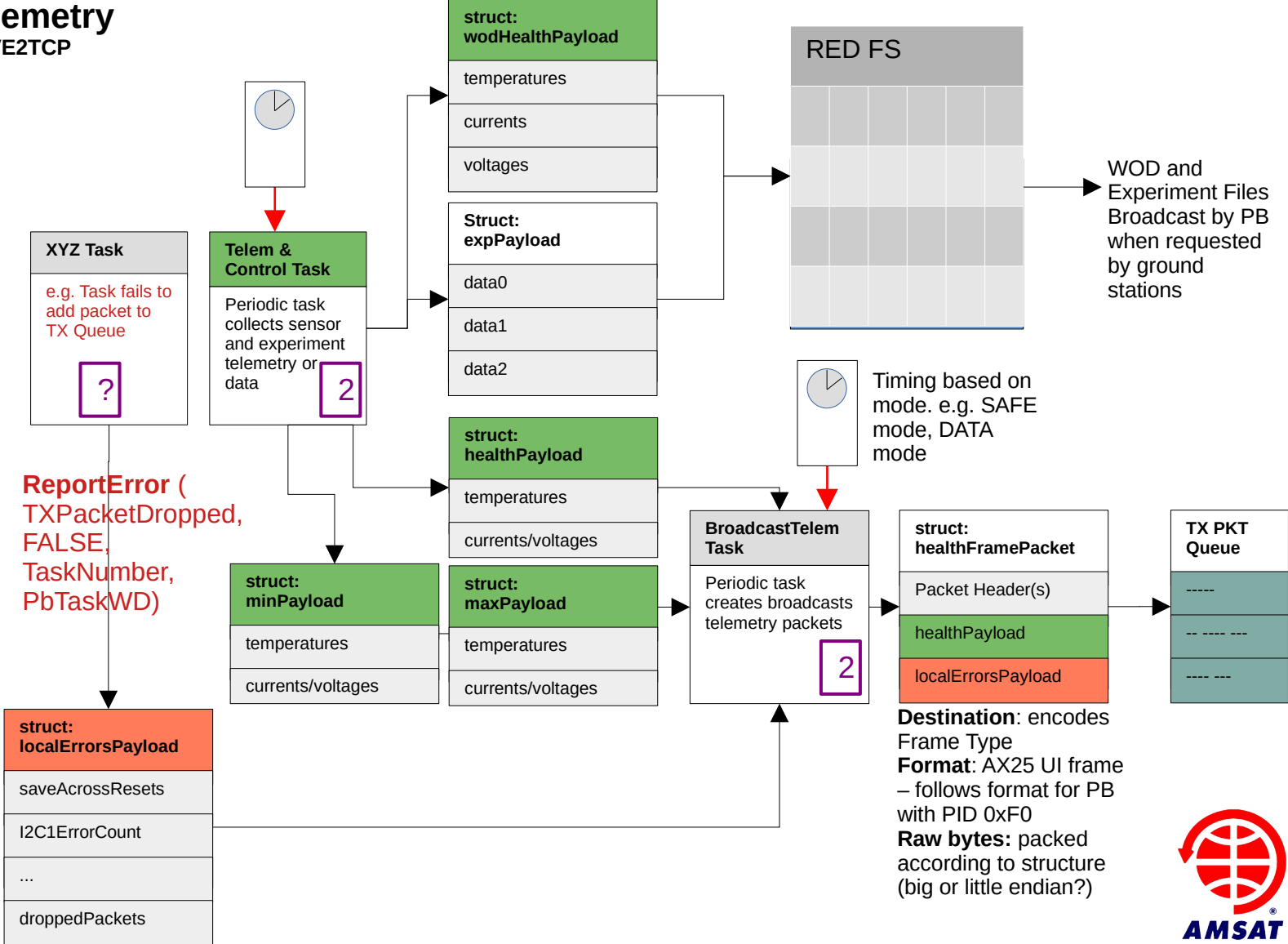
→ Data

→ RTOS Event

2

RTOS Priority

RTOS Timer



Destination: encodes Frame Type
Format: AX25 UI frame – follows format for PB with PID 0xF0
Raw bytes: packed according to structure (big or little endian?)

