

INPUT DATA STRUCTURES

LAG FRAME STORE

SEGMENT LIST

Segment Number	Frame Count Flag
1	0
2	119
3	1000
4	1000
5	1000
6	-1000
7	-1
8	0
9	0
10	0

	Frame Index	LTA Frame Data
Segment 1	1	
	2	
	.	.
	1000	
Segment 2	1001	
	1002	
	.	.
	2000	
Segment 3	2001	
	2002	
	.	.
	.	.
	2999	Lag Set N, Frame 0
	3000	Lag Set N+1, Frame 0
Segment 4	3001	Lag Set N, Frame 2
	3002	Lag Set N, Frame 1
	3003	Lag Set N+1, Frame 3
	3004	Lag Set N+1, Frame 1
	.	.
	.	.
	3017	Lag Set N, Frame 7
	3018	Lag Set N+3, Frame 0
	3019	Lag Set N, Frame 6
	3020	Lag Set N+3, Frame 1
	.	.
	.	.
Segments 5 to 10	4000	
	4001	
	.	.
	10000	

SEGMENT LIST

Segment Number	Frame Count Flag	
1	0	Available for Input
2	119	DP in progress
3	1000	Sorted and ready for DP
4	1000	Sorted and ready for DP
5	1000	Sorted and ready for DP
6	-1000	Sort in progress
7	-1	Input in progress
8	0	Available for Input
9	0	Available for Input
10	0	Available for Input

Segment List Frame Count Flag Values:

0 = Available for input
 -1 = Locked for input
 -Max = Input completed, available for Sort
 +Max = Sort completed, available for DP
 >0 and < Max = DP in progress
 > -MAX and < -1 = Partial input

MAX = Number of frames per Lag Frame Store segment

Total Lag Frame Store size on the order of 100s of Mbytes

LAG SET TABLE (LST) DATA STRUCTURE

Backend Integration Interval Bin	Correlator Dump (Time Stamp) Bin	(Local) Baseline Bin	Polarization Product Bin	Subband Bin
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
⋮	⋮	3	⋮	⋮
⋮	⋮	4	⋮	⋮
67	17	5	9	11
⋮	⋮	6	⋮	⋮
⋮	⋮	7	⋮	⋮
149	63	8	15	15

The total observation interval in this example is 16 minutes.

The Integration Interval is the Backend integration time, 6.4 seconds in this example or 150 Backend Integration bins.

The Time Stamp Interval is the Correlator dump rate, 0.1 seconds in this example or 64 Correlator Dump bins.

The baseline bin number is local to a given processor, 9 baselines per processor are used in this example.

There can be from 1 to 16 polarization products, 16 are used in this example.

There can be from 1 to 16 subbands, 16 are used in this example.

GLOBAL BASELINE NUMBER LOOKUP TABLE

		0	1	2	3	SID_X	24	25	26
SID_Y	0	351	0	1	2		23	24	25
	1	0	352	26	27		48	49	50
	2	1	26	353	51		72	73	2743
	24	23	48	72	95		375	348	349
	25	24	49	73	96		348	376	350
	26	25	59	74	97		349	350	377

POLARIZATION PRODUCT NUMBER LOOKUP TABLE

	0	1	2	3	4	5	6	7	BBID_X
0	0	1	-1						→
1	2	3	-1						→
2	-1	-1	4	5	-1				→
3			6	7	-1				→
4			-1	-1	8	9	-1	-1	
5					10	11	-1	-1	
6					-1	-1	12	13	
7					-1	-1	14	15	
BBID_Y	↓	↓	↓	↓					

All 16 possible products are active

POLARIZATION PRODUCT NUMBER LOOKUP TABLE

	0	1	2	3	4	5	6	7	BBID_X
0	0	-1							→
1	-1	1	-1						→
2		-1	2	-1					→
3			-1	3	-1				→
4				-1	4	-1			→
5					-1	5	-1	-1	
6						-1	6	-1	
7						-1	-1	7	
BBID_Y	↓	↓	↓	↓	↓				

Only RR and LL products are active

LAG SET TABLE ENTRIES

(8 lag frames X 128 lags per frame = 1024 lags per lag set)

First Time Stamp	Last Time Stamp	Integration Interval Bin	Time Stamp Bin	Baseline Bin	Polarization Product Bin	Subband Bin	Frame Count	Skip Count	LFS Frame Index	FFT Flag	Integration Flag	Output Flag	Reserved for Future Use		
.	.	.	.	.	.	.	.	.	.	.	.	.			
403.7	403.7	67	17	5	9	3	8	0	i	0	0	0			
403.7	403.7	67	17	5	9	4	8	0	i + 1024	0	0	0			
403.7	403.7	67	17	5	9	5	4	0	i + 2048	0	0	0			
403.7	403.7	67	17	5	9	6	2	0	i + 3072	0	0	0			
.	.	.	.	.	.	.	.	.	.	.	.	.			

Note: Time stamps are shown in seconds from the beginning of the observation for presentation purposes. In practice they will be expressed in Correlator clock tics or the equivalent.

LAG SET STORE (LSS) DATA STRUCTURE

Integration Interval Bin		Subband Bin	Complex Lags / Complex Spectral Points		
0		0	0 - 127	. . .	896 - 1023
1		1	0 - 127	. . .	896 - 1023
2		2	0 - 127	. . .	896 - 1023
.		.		.	
.		.		.	
.		.		.	
67		11	0 - 127	. . .	896 - 1023
.		.		.	
.		.		.	
.		.		.	
149		15	0 - 127	. . .	896 - 1023

The total observation interval in this example is 16 minutes.

The Integration Interval is the Backend integration time, 6.4 seconds in this example or 150 Backend Integration bins.

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The baseline bin number is local to a given processor, 9 baselines per processor are used in this example.

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There can be from 1 to 16 subbands, 16 are used in this example.

INPUT LAG FRAME TO LAG SET STORE MAPPING

Subband Bin	0	1	2	3	4	5	6	7	Lag Frame Number in Lag Set
• • •									
3	2999	3002	3001	3003	3007	3008	3019	3017	
4	3000	3004	3005	3006	3011	3012	3013	3014	
5	3009	3010	3015	3016					
6	3018	3020							
• • •									