

3Dsurvey 2.17.1 with Windows update processing productivity benchmarks

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images – 100; Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

	CPU time	GPU time	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points/Triangles	3Dsurvey 200	3Dsurvey 500	3Dsurvey 3000	3Dsurvey 1000	3Dsurvey 5000
Storage							Storage X 250GB Standard	Storage X 250GB Standard	Storage X 250GB Standard	Storage X 250GB Standard	Storage X 250GB Standard
GPU							1 x TESLA T4	1 x TESLA T4	4 x TESLA T4	2 x TESLA M60	4 x TESLA M60
GPU Task Manager							Cuda	Cuda	Cuda	Compute_0	Compute_0
CPU							8 vCPU 2.5GHz	32 vCPU 2.5GHz	48 vCPU 2.5GHz	32 vCPU 2.3GHz	64 vCPU 2.3GHz
RAM							32	128	192	244	488
Bundle Adjustment	99%	1%	Normal				4m 44s	2m 32s	2m 0s	4m 47s	6m 59s
Dense Reconstruction	2%	98%	Low	1point / 64 (8x8) pix	4	500,000	5m 59s	4m 52s	1m 45s	3m 0s	2m 14s
Dense Reconstruction	2%	98%	Medium	1point / 16 (4x4) pix	16	16,000,000	43m 7s	33m 47s	12m 6s	24m 56s	15m 18s
Dense Reconstruction	2%	98%	High	1point / 4 (2x2) pix	20	28,000,000		55m 51s	20m 30s	40m 19s	24m 42s
Dense Reconstruction	2%	98%	Extreme	1point / 1 pix	64	57,000,000			38m 17s	1h 5m	45m 3s
Regular grid mesh (DSM)	100%	0%	20cm			57,000,000			5m 6s		
Full 3D Mesh	100%	0%	High-High-Full			2,000,000			20m 30s		25m 20s
True Orthophoto from 3D Mesh			2cm						6m 1s		7m 30s
Traditional Orthophoto from DSM			2cm						43m		
	CPU	GPU	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points/Triangles	3Dsurvey 200	3Dsurvey 500	3Dsurvey 3000	3Dsurvey 3000	
Storage							Storage X 250GB Standard	Storage X 250GB Standard	Storage X 250GB Standard	Ephemeral D:	
GPU							1 x A10G	1 x A10G	4 x A10G	4 x A10G	
GPU Task Manager							Cuda	Cuda	Cuda	Cuda	
CPU							8 vCPU 2.8GHz	32 vCPU 2.8GHz	48 vCPU 2.8GHz	48 vCPU 2.8GHz	
RAM							32	128	192	192	
Bundle Adjustment	99%	1%	Normal				4m 15s	2m 27s	1m 53s	1m 39s	
Dense Reconstruction	5%	95%	Low	1point / 64 (8x8) pix	4	500,000	7m 16s	6m 32s	1m 27s	1m 24s	
Dense Reconstruction	5%	95%	Medium	1point / 16 (4x4) pix	16	16,000,000	57m 14s	44m 33s	11m 29s	9m 58s	
Dense Reconstruction	5%	95%	High	1point / 4 (2x2) pix	20	28,000,000			18m 24s	15m 50s	
Dense Reconstruction	5%	95%	Extreme	1point / 1 pix	64	57,000,000			33m 47s	28m 14s	
Regular grid mesh (DSM)	100%	0%	20cm			57,000,000			4m 12s	4m 17s	
Full 3D Mesh	100%	0%	High-High-Full			2,000,000			14m 40s	18m 27s	
True Orthophoto from 3D Mesh			2cm						5m 57s	6m 4s	
Traditional Orthophoto from DSM			2cm						38m	43m	

3Dsurvey 2.16.0 with Windows update processing productivity benchmarks

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images – 100; Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	3Dsurvey 200	3Dsurvey 200	3Dsurvey 3000
OS					Windows	Windows	Windows
Storage					Storage X Standard	Storage Ephemeral D	Storage X Standard
GPU					1 x A10G	1 x A10G	4 x A10G
CPU					8 vCPU 2.8GHz	8 vCPU 2.8GHz	48 vCPU 2.8GHz
RAM					32	32	192
Bundle Adjustment	Normal				3m 23s	3m 29s	2m 7s
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	7m 31s	7m 31s	1m 41s
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	57m	52m	16m 26s
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429			29m
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642			48m
Full 3D Mesh	High-High-Full						18m 43s
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	3Dsurvey 200	3Dsurvey 500	3Dsurvey 3000
OS					Windows	Windows	Windows
Storage					Storage X Standard	Storage X Standard	Storage X Standard
GPU					1 x TESLA T4	1 x TESLA T4	4 x TESLA T4
CPU					8 vCPU 2.5GHz	32 vCPU 2.5GHz	48 vCPU 2.5GHz
RAM					32	128	192
Bundle Adjustment	Normal				3m 50s	2m 20s	2m 0s
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	5m 5s	4m 12s	1m 45s
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	41m 54s	38m 11s	15m 19s
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429	1h 12m	53m	26m
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642		1h 27m	42m
Full 3D Mesh	High-High-Full				27m	21m	20m
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	3Dsurvey 1000	3Dsurvey 5000	
OS					Windows	Windows	
Storage					Storage X Standard	Storage X Standard	
GPU					2 x TESLA M60	4 x TESLA M60	
CPU					32 vCPU 2.3GHz	64 vCPU 2.3GHz	
RAM					244	488	
Bundle Adjustment	Normal				4m 36s	8m 26s	
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	3m 4s	2m 24s	
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	25m	19m	
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429	44m	33m	
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642	1h 14m	54m	
Full 3D Mesh	High-High-Full				23m	26m	

3Dsurvey 2.15.0 with Windows update and new NVIDIA A10G GPUs processing productivity benchmarks

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images – 100; Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	3Dsurvey 200	3Dsurvey 200	3Dsurvey 3000	3Dsurvey 3000
OS					Windows	Windows	Windows	Windows
Storage					Storage X Standard	Ephemeral D	Storage X Standard	Ephemeral D
GPU					1 x A10G	1 x A10G	4 x A10G	4 x A10G
CPU					8 vCPU 2.8GHz	8 vCPU 2.8GHz	48 vCPU 2.8GHz	48 vCPU 2.8GHz
RAM					32	32	192	192
Bundle Adjustment	Normal				3m 16s	2m 53s	1m 54s	1m 37s
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	7m 34s	7m 24s	1m 41s	1m 28s
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	55m	50m	16m	11m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429			29m	19m
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642			48m	31m
Full 3D Mesh	High-High-Full							16m
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	3Dsurvey 200	3Dsurvey 500	3Dsurvey 3000	3Dsurvey 3000
OS					Windows	Windows	Windows	Windows
Storage					Storage X Standard	Storage X Standard	Storage X Standard	Ephemeral D
GPU					1 x TESLA T4	1 x TESLA T4	4 x TESLA T4	4 x TESLA T4
CPU					8 vCPU 2.5GHz	32 vCPU 2.5GHz	48 vCPU 2.5GHz	48 vCPU 2.5GHz
RAM					32	128	192	192
Bundle Adjustment	Normal				3m 56s	2m 0s	1m 48s	1m 40s
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	5m 9s	3m 58s	1m 47s	1m 40s
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	43m	30m	15m	12m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429	1h 16m	53m	26m	21m
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642	2h 10m	1h 27m	42m	36m
Full 3D Mesh	High-High-Full				29m	21m	20m	18m
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	3Dsurvey 1000	3Dsurvey 5000		
OS					Windows	Windows		
Storage					Storage X Standard	Storage X Standard		
GPU					2 x TESLA M60	4 x TESLA M60		
CPU					32 vCPU 2.3GHz	64 vCPU 2.3GHz		
RAM					244	488		
Bundle Adjustment	Normal				4m 34s	8m 41s		
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	3m 6s	2m 25s		
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	26m	19m		
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429	45m	32m		
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642	1h 17m	54m		
Full 3D Mesh	High-High-Full				23m	26m		

3Dsurvey 2.15.0 processing productivity benchmarks

Project parameters (drone aerial survey):

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images - 100

Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	GPU	CPU	3Dsurvey 200	3Dsurvey 500	3Dsurvey 1000	3Dsurvey 3000	3Dsurvey 5000
OS							Windows	Windows	Windows	Windows	Windows
Storage							Storage X Standard	Storage X Standard	Storage X Standard	Storage X Standard	Storage X Standard
GPU							1 x TESLA T4	1 x TESLA T4	2 x TESLA M60	4 x TESLA T4	4 x TESLA M60
CPU							Cascade Lake 24C 8 vCPU 2.5GHz	Cascade Lake 24C 32 vCPU 2.5GHz	Intel Xeon E5-2686 32 vCPU 2.3GHz	Cascade Lake 24C 48 vCPU 2.5GHz	Intel Xeon E5-2686 64 vCPU 2.3GHz
RAM							32	128	244	192	488
Bundle Adjustment	Normal					v	3m 40s	2m 0s	4m 31s	1m 48s	8m 1s
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	648,327	v	v	5m 8s	3m 58s	3m 5s	1m 47s	2m 40s
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	v	v	41m	30m	26m	15m	19m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,222,429	v	v	1h 15m	53m	47m	26m	33m
Dense Reconstruction	Extreme	1point / 1 pix	64	51,341,642	v	v	2h 9m	1h 27m	1h 17m	42m	57m
Full 3D Mesh	High-High-Full					v	29m	21m	23m	20m	26m

3Dsury 2.14.1 processing productivity benchmarks

Project parameters (drone aerial survey):

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images - 100

Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	GPU	CPU	3Dsury 200	3Dsury 3000
OS							Windows	Windows
Storage							Storage X Standard	Storage X Standard
GPU							1 x TESLA T4	4 x TESLA T4
CPU							Cascade Lake 24C 8 vCPU 2.5GHz	Cascade Lake 24C 48 vCPU 2.5GHz
Number of images							100	100
Image size (MP)							17	17
File size (MB)							7	7
Image file format							JPEG	JPEG
RAM							32	192
Bundle Adjustment	Normal					v	6m	2m
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	651,314	v	v	6m	2m
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,110,120	v	v	41m	14m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,147,324	v	v	1h 15m	26m
Dense Reconstruction	Extreme	1point / 1 pix	64	51,236,913	v	v	2h 9m	46m
Full 3D Mesh	High-High-Full					v	29m	22m

3Dsury 2.13.2 processing productivity benchmarks

Project parameters (drone aerial survey):

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images – 650; Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 9 sq. km

	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	GPU	CPU	3Dsury 500	3Dsury 3000	3Dsury 3000
OS							Windows	Windows	Windows
Storage							Storage X STANDARD	Storage X STANDARD	LOCAL D
GPU							1 x TESLA T4	4 x TESLA T4	4 x TESLA T4
CPU							Cascade Lake 24C 32 vCPU 2.5GHz	Cascade Lake 24C 48 vCPU 2.5GHz	Cascade Lake 24C 48 vCPU 2.5GHz
RAM							128	192	192
Bundle Adjustment	Normal				v	v	27m	24m	23m
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	2,830,475	v	v	28m	14m	13m
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	76,326,212	v	v	4h 15m	2h 20m	1h 55m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	183,399,942	v	v			3h 30m
Full 3D Mesh	High-High-Full					v			1h 25m
True orthophoto	0.01cm/px				v	v			24m

3Dsury 2.13 processing productivity benchmarks

Project parameters (drone aerial survey):

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images - 100

Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

							28-02-21	28-02-21	28-02-21	28-02-21	28-02-21
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	GPU	CPU	3Dsury 200	3Dsury 500	3Dsury 1000	3Dsury 3000	3Dsury 5000
OS							Windows	Windows	Windows	Windows	Windows
Storage							Storage X enhanced	Storage X enhanced	Storage X enhanced	Storage X enhanced	Storage X enhanced
GPU							1 x TESLA T4	1 x TESLA T4	2 x TESLA M60	4 x TESLA T4	4 x TESLA M60
CPU							Cascade Lake 24C 8 vCPU 2.5GHz	Cascade Lake 24C 32 vCPU 2.5GHz	Intel Xeon E5-2686 v4 32 vCPU 2.3GHz	Cascade Lake 24C 48 vCPU 2.5GHz	Intel Xeon E5-2686 v4 64 vCPU 2.3GHz
RAM							32	128	244	192	488
Bundle Adjustment	Normal					v	5m 15s	2m 39s	5m 10s	2m 30s	8m 42s
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	668,765	v	v	4m 47s	3m 56s	3m 6s	1m 43s	2m 23s
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	14,197,996	v	v	37m	30m	26m	13m	17m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	36,228,163	v	v	1h 5m	50m	43m	23m	32m
Dense Reconstruction	Extreme	1point / 1 pix	64	69,504,567	v	v	1h 58m	1h 26m	1h 14m	41m	51m
Full 3D Mesh	High-High-Full					v	26m	20m	24m	19m	29m

3Dsurvey 2.11 processing productivity benchmarks

Project parameters (drone aerial survey):

Camera - FC6310 (8.8mm); Image size – 16 MP (4864 x 3648); File size (JPG) – 7.5 MB

Number of images - 100

Side/Forward overlap - 70%; Flight altitude – 320m; GSD – 8 cm; Area - 1.35 sq. km

							29-08-20	23-08-20	23-08-20	23-08-20	23-08-20
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	GPU	CPU	Local PC	3Dsurvey 200	3Dsurvey 200	3Dsurvey 500	3Dsurvey 500
OS							Windows 10	Windows	Windows	Windows	Windows
Storage							Local disk	Storage X enhanced	Local D Project D	Storage X enhanced	Local D Project D
GPU							1 x GeForce GTX 1080	1 x TESLA T4	1 x TESLA T4	1 x TESLA T4	1 x TESLA T4
CPU							Intel(R) Xeon(R) W-2123 CPU 3.60GHz	Cascade Lake 24C 8 vCPU 2.5GHz	Cascade Lake 24C 8 vCPU 2.5GHz	Cascade Lake 24C 32 vCPU 2.5GHz	Cascade Lake 24C 32 vCPU 2.5GHz
RAM							16	32	32	128	128
Bundle Adjustment	Normal					v	18m	11m	17m	6m	6m
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	338,716	v		6m	5m	5m	5m	6m
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	17,275,121	v		1h 32m	49m	47m	47m	40m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	21,679,089	v		2h 42m	1h 21m	1h 18m	1h 14m	1h 4m
Dense Reconstruction	Extreme	1point / 1 pix	64	69,504,567	v		5h 48m	2h 33m	2h 30m	2h 12m	1h 55m
Full 3D Mesh	High-High					v	1h 0m	54m	49m	40m	30m

							24-08-20	24-08-20
	Quality	PPP (Point per pixel)	Average Points /sq.m	Number of Points	GPU	CPU	3Dsurvey 3000	3Dsurvey 3000
OS							Windows	Windows
Storage							Storage X enhanced	Local D Project D
GPU							4 x TESLA T4	4 x TESLA T4
CPU							Cascade Lake 24C 48 vCPU 2.5GHz	Cascade Lake 24C 48 vCPU 2.5GHz
RAM							192	192
Bundle Adjustment	Normal					v	7m	15m
Dense Reconstruction	Low	1point / 64 (8x8) pix	4	338,716	v		5m	5m
Dense Reconstruction	Medium	1point / 16 (4x4) pix	16	17,275,121	v		45m	41m
Dense Reconstruction	High	1point / 4 (2x2) pix	20	21,679,089	v		1h 11m	1h 6m
Dense Reconstruction	Extreme	1point / 1 pix	64	69,504,567	v		2h 21m	2h 0m
Full 3D Mesh	High-High					v	29m	31m