Sample result of DDP benchmark:

Key takeaway:

- 1. In the forward path, Python impl is 1% faster than DPP Core. Python SYNC and ASYNC are on-par
- 2. re2 backward, speed ranking: DDPCore > Python Async > Python SYNC.
- 3. Python ASYNC backward is [2%-20%] slower than DDPCore, varies by buffer size slightly
 - o It's expected since larger buffer size means less parallelization as number of buckets decreases
 - No difference once buffer size is larger than total elements (24.37M) such as 25M, 26M, 27M
- 4. Python SYNC backward is 20% slower than DDP Core, independent of buffer size

The following is generated summary from compare_ddp.py

DDP: [for	wardl			Mean	delta%	mean	delta%	p90
-	-	delta%%	p99					Į
	=		=					
					_			
DDPOption	.DDP_CPP_	CORE		210.141	0	210.042	0	210.64
0	210.728	0	212.782	0				
_	_	DDP_ASYNC_R				208.235	-0.860175	208.376
		-1.09622						
=	_	DP_SYNC_RE				208.269	-0.843666	208.399
-1.06421	208.441	-1.08532	208.526	-2.0002	1			
DDP: [bac	kwardl			Mean	delta%	mean	delta%	n90
-	-	delta%%	p99		ueitas	mean	ueilas	Бэо
	-		-					
DDPOption	.DDP_CPP	CORE		471.928	0	471.874	0	472.614
0	472.739	0	472.845	0				
DDPOption	.PYTHON_D	DP_ASYNC_R	EDUCTION	483.761	2.50722	483.565	2.4776	485.201
2.66322	486.439	2.89801	487.63	3.12684				
=	_	DDP_SYNC_RE				567.739	20.3159	571.238
20.8676	572.456	21.0935	574.975	21.5991				
	_	ffer_size:	4M ===					
DDP: [for	-				delta%	mean	delta%	p90
	=	delta%%	=					
DDPOption				210.668	0	210.536	0	211.12
0	211.243	0	213.027	0				
DDPOption	.PYTHON_D	DDP_ASYNC_R	EDUCTION	208.519	-1.0202	208.526	-0.954858	208.652
		-1.2098						
DDPOption	.PYTHON_D	DDP_SYNC_RE	DUCTION	208.17	-1.18543	208.188	-1.1155	208.304
-1.33418	208.331	-1.37868	208.375	-2.1838	4			

delta%	p95	delta%%	p99	delta%				
	n.DDP_CPP			470.809	0	470.785	0	471.277
0	471.3	0	471.341	0				
	_	DDP_ASYNC_RI				484.757	2.96779	487.478
		3.60907						
	_	DDP_SYNC_RE				569.553	20.9794	575.34
22.0812	5/5./18	22.1554	5/9./09	22.9916				
=== Summa	ary for bu	uffer_size:	5M ===					
DDP: [fo	rward]			Mean	delta%	mean	delta%	p90
		delta%%						
		_CORE		210.501	0	210.56	0	211.131
0	211.321	0	211.676	0				
	_	DDP_ASYNC_RI				208.286	-1.08026	208.39
		-1.373						
-	_	DDP_SYNC_RE				208.209	-1.11681	208.373
-1.30658	208.413	-1.37579	208.505	-1.4984	1			
DDP: [ba					delta%	mean	delta%	p90
	=	delta%%	=					
		CORE		471.921	0	471.908	0	472.321
		0	472.473	0				
DDPOption	n.PYTHON_I	DDP_ASYNC_R	EDUCTION	491.629	4.176	491.88	4.23226	492.99
4.37604	493.322	4.43122	493.571	4.46542				
DDPOption	n.PYTHON_I	DDP_SYNC_RE	DUCTION	568.702	20.5077	570.053	20.7975	574.92
21.7225	576.329	22.003	578.639	22.4703				
	_	uffer_size:	6M ===					
DDP: [fo:	•	1 1. 00			delta%	mean	delta9	g p90
	=	delta%%	=					
					-			
DDPOption	n.DDP_CPP	_CORE		210.357	0	210.192	0	211.027
		0						
	_	DDP_ASYNC_RI -1.29541				208.208	-0.943888	3 208.37
		-1.29541 DDP SYNC RE				208.287	-0.906401	208.47
=	_	-1.26006				200,207	0.300101	200117
DDP: [ba	akuardi			Moor	do1+ = 0	m	dol+aº	200
		delta%%	p99		delta%	mean	uelld*	Ьэo
	=		=					

DDPOption.DDP_CPP_CORE		0	471.911	0	472.311
0 472.452 0 472.552 DDPOption.PYTHON_DDP_ASYNC_REDUCTION	491.337		491.197	4.08693	492.112
4.19242 493.681 4.4933 494.128			550 460		554 000
DDPOption.PYTHON_DDP_SYNC_REDUCTION 21.5982 576.197 21.9589 577.769			5/0.468	20.8848	574.322
=== Summary for buffer size: 7M ===					
DDP: [forward]	Mean	delta%	mean	delta%	p90
delta% p95 delta%% p99					
DDPOption.DDP_CPP_CORE			210.23	0	211.335
0 211.646 0 212.208	0				
DDPOption.PYTHON_DDP_ASYNC_REDUCTION	208.3	-1.03175	208.283	-0.926544	208.452
-1.3644 208.516 -1.4787 208.683					
DDPOption.PYTHON_DDP_SYNC_REDUCTION			208.322	-0.907727	208.457
-1.36216 208.508 -1.48257 208.64	-1.6810	2			
DDP: [backward]	Moan	delta%	moan	do1+2%	200
delta% p95 delta% p99			mean	ueitas	рэо
		0	475.652	0	476.054
0 476.204 0 476.343					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION 4.27489 497.102 4.38859 498.552			495.646	4.20351	496.405
4.2/489 49/.102 4.38859 498.552 DDPOption.PYTHON DDP SYNC REDUCTION			570 335	19.9059	574.516
20.683 576.003 20.9573 578.729			3,0.333	19.3003	371.310
=== Summary for buffer_size: 8M ===					
DDP: [forward]		delta%	mean	delta%	p90
delta% p95 delta%% p99					
		_			
		0	210.404	0	210.867
0 211.004 0 211.632					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION			208.211	-1.04268	208.378
-1.18039 208.418 -1.22576 208.51 DDPOption.PYTHON DDP SYNC REDUCTION			208 416	_0 9/1522	208 594
-1.07788 208.632 -1.12397 208.839			200.410	-0.94322	200.394
DDP: [backward]	Mean	delta%	mean	delta%	p90
delta% p95 delta%% p99	delta%				
DDPOption.DDP CPP CORE	471 366		471 304	0	471.727
0 471.945 0 472.15		U	7/1.094	U	7/1./2/

DDPOption.PYTHON_DDP_ASYNC_REDUCTION 6.99008 504.88 6.9785 505.829	503.342		503.624	6.83717	504.701
DDPOption.PYTHON DDP SYNC REDUCTION			571 036	21.3075	574.946
21.8813 575.869 22.0202 576.892			371.030	21.3073	374.940
22.0202 370.032	22.1000				
=== Summary for buffer size: 9M ===					
DDP: [forward]	Mean	delta%	mean	delta%	n90
delta% p95 delta%% p99					P
DDPOption.DDP CPP CORE	210.666	0	210.605	0	211.053
0 211.409 0 212.955					
DDPOption.PYTHON DDP ASYNC REDUCTION		-1.14128	208.247	-1.11954	208.39
-1.26134 208.429 -1.40948 208.532					
DDPOption.PYTHON DDP SYNC REDUCTION	208.249	-1.14753	208.231	-1.12721	208.421
-1.24665 208.462 -1.39398 208.581	-2.0538	5			
DDP: [backward]	Mean	delta%	mean	delta%	p90
delta% p95 delta%% p99	delta%				
DDPOption.DDP_CPP_CORE	475.742	0	475.783	0	476.311
0 476.586 0 477.329	0				
DDPOption.PYTHON_DDP_ASYNC_REDUCTION	505.635	6.2835	505.944	6.33916	507.325
6.51129 507.566 6.50028 509.167	6.67001				
DDPOption.PYTHON_DDP_SYNC_REDUCTION	571.18	20.0608	570.698	19.9493	574.136
20.538 574.622 20.5704 577.593	21.0052				
=== Summary for buffer_size: 10M ===					
DDP: [forward]	Mean	delta%	mean	delta	% p90
delta% p95 delta%% p99	delta%				
		-			
DDPOption.DDP_CPP_CORE		0	210.238	0	210.766
0 210.975 0 211.777		0 000004	200 267	0 000011	7 000 400
DDPOption.PYTHON_DDP_ASYNC_REDUCTION -1.08294 208.537 -1.15571 208.622			208.307	-0.89031	7 208.483
			200 200	0 01040	200 422
DDPOption.PYTHON_DDP_SYNC_REDUCTION			208.306	-0.91942	208.423
-1.11161 208.522 -1.16244 208.663	-1.4/02	3			
DDP: [backward]	Maan	delta%	mean	de1+22	nan
delta% p95 delta%% p99		dercas	mean	uei ca o	poo
dertas ps5 dertass ps5					
DDPOption.DDP CPP CORE			471.33	0	471.687
0 471.798 0 471.91		v	1.1.00	Ü	
DDPOption.PYTHON DDP ASYNC REDUCTION		7.56332	506.819	7.52959	507.886
7.67448 508.554 7.79049 509.476					

DDDO-11 DVEHON DDD GVNG DEDHGETON					
DDPOption.PYTHON_DDP_SYNC_REDUCTION	568.922	20.723	569.875	20.9079	572.408
21.3534 573.358 21.5261 576.072	22.0724				
=== Summary for buffer_size: 11M ===					
DDP: [forward]		delta%	mean	delta%	p90
delta% p95 delta%% p99					
DDPOption.DDP_CPP_CORE		0	210.003	0	210.431
0 210.52 0 212.437					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION			208.382	-0.772006	208.526
-0.905139 208.591 -0.916353 208.66					
DDPOption.PYTHON_DDP_SYNC_REDUCTION			208.559	-0.68767	208.795
-0.777346 208.889 -0.775075 209.06	9 -1.585	34			
DDP: [backward]			mean	delta%	р90
delta% p95 delta%% p99					
		0	470.107	0	470.559
0 470.657 0 471.173			540 565	0 64045	-1.6 -0.0
DDPOption.PYTHON_DDP_ASYNC_REDUCTION			510.767	8.64915	516.538
9.77108 517.193 9.88746 517.7			554 004	04 6540	100
DDPOption.PYTHON_DDP_SYNC_REDUCTION		21.6685	571.894	21.6519	574.109
22.0057 574.949 22.159 576.708	22.3982				
C					
=== Summary for buffer size: 12M ===					
DDD. [forward]	Moon	do1+00	moon	do1+20	200
DDP: [forward]		delta%	mean	delta%	p90
DDP: [forward] delta% p95 delta%% p99		delta%	mean	delta%	p90
		delta%	mean	delta%	p90
delta% p95 delta%% p99	delta%				
delta% p95 delta%% p99	delta% 210.276	delta% 0			p90
delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 211.507 0 212.171	delta% 210.276	 - 0	210.11	0	210.724
delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 211.507 0 212.171 DDPOption.PYTHON_DDP_ASYNC_REDUCTION	delta% 210.276 0 208.166	0 -1.00303	210.11	0	210.724
delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 211.507 0 212.171 DDPOption.PYTHON_DDP_ASYNC_REDUCTION -1.14142 208.352 -1.49137 208.43	delta% 210.276 0 208.166 -1.76300	 0 -1.00303	210.11	0 -0.929433	210.724
delta% p95 delta% p99	delta% 210.276 0 208.166 -1.76300 208.195	-1.00303 6 -0.989416	210.11	0 -0.929433	210.724
delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 211.507 0 212.171 DDPOption.PYTHON_DDP_ASYNC_REDUCTION -1.14142 208.352 -1.49137 208.43	delta% 210.276 0 208.166 -1.76300 208.195	-1.00303 6 -0.989416	210.11	0 -0.929433	210.724
delta% p95 delta% p99	delta% 210.276 0 208.166 -1.76300 208.195	-1.00303 6 -0.989416	210.11	0 -0.929433	210.724
delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300	 0 -1.00303 6 -0.989416	210.11 208.158 208.204	0 -0.929433 -0.907414	210.724 208.319 208.337
delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 211.507 0 212.171 DDPOption.PYTHON_DDP_ASYNC_REDUCTION -1.14142 208.352 -1.49137 208.43 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.13315 208.366 -1.48507 208.409 DDP: [backward]	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300	 0 -1.00303 6 -0.989416	210.11 208.158 208.204	0 -0.929433	210.724 208.319 208.337
delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 211.507 0 212.171 DDPOption.PYTHON_DDP_ASYNC_REDUCTION -1.14142 208.352 -1.49137 208.43 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.13315 208.366 -1.48507 208.409 DDP: [backward] delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300		210.11 208.158 208.204	0 -0.929433 -0.907414 delta%	210.724 208.319 208.337
delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300 Mean delta%		210.11 208.158 208.204	0 -0.929433 -0.907414 delta%	210.724 208.319 208.337
delta% p95 delta%% p99	delta%		210.11 208.158 208.204 mean	0 -0.929433 -0.907414 delta%	210.724 208.319 208.337
delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300 Mean delta% 477.764		210.11 208.158 208.204 mean	0 -0.929433 -0.907414 delta%	210.724 208.319 208.337
delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.7630 208.195 -1.7730 Mean delta% 477.764 0		210.11 208.158 208.204 mean 477.682	0 -0.929433 -0.907414 delta%	210.724 208.319 208.337 p90
delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300 Mean delta% 477.764 0 518.928		210.11 208.158 208.204 mean 477.682	0 -0.929433 -0.907414 delta%	210.724 208.319 208.337 p90
delta% p95 delta%% p99	delta% 210.276 0 208.166 -1.76300 208.195 -1.77300 Mean delta% 477.764 0 518.928 9.87188		210.11 208.158 208.204 mean 477.682 519.858	0 -0.929433 -0.907414 delta% 0 8.82943	210.724 208.319 208.337 p90
delta% p95 delta%% p99	delta%		210.11 208.158 208.204 mean 477.682 519.858	0 -0.929433 -0.907414 delta% 0 8.82943	210.724 208.319 208.337 p90

=== Summary for buffer_size: 13M =		1 1. 0		1 1 0	0.0
DDP: [forward]		delta%	mean	delta%	p90
delta% p95 delta%% p9 					
DDPOption.DDP CPP CORE	210.758	0	210 618	0	211.531
) 211.888 0 212.1		O	210.010	U	211.551
DDPOption.PYTHON DDP ASYNC REDUCTI		-1 25216	208 104	-1 19357	208 269
-1.54205 208.325 -1.68138 208.			200,101	1.13007	200.200
DDPOption.PYTHON DDP SYNC REDUCTIO			208.106	-1.19253	208.245
1.55357 208.318 -1.68506 208.					
		1 1. 0		1 1. 0	0.0
DDP: [backward] delta%		uelta%	mean	delta%	р90
ertas p95 dertass ps					
DDPOption.DDP CPP CORE	471.435	0	471.443	0	471.977
472.104 0 472.53					
DPOption.PYTHON_DDP_ASYNC_REDUCTI	ON 514.153	9.06126	512.027	8.60847	521.519
0.4968 522.174 10.6057 523.4	5 10.7752				
DPOption.PYTHON_DDP_SYNC_REDUCTION	N 567.48 2	20.3729	567.488	20.3725	570.315
20.8354 571.16 20.9817 572.4 === Summary for buffer size: 14M =					
=== Summary for buffer_size: 14M =	== Mean 9 delta%	delta%	mean	delta%	99q
=== Summary for buffer_size: 14M = DDP: [forward] delta% p95 delta%% p9	== Mean 9 delta%				
=== Summary for buffer_size: 14M = DDP: [forward] Helta% p95 delta%% p9	== Mean 9 delta% 210.501 8 0	0	210.384	0	210.973
=== Summary for buffer_size: 14M = DDP: [forward] delta% p95 delta%% p9	== Mean 9 delta% 210.501 8 0 ON 208.199	0 -1.09343	210.384	0	210.973
=== Summary for buffer_size: 14M = DDP: [forward] delta%	Mean 9 delta% 210.501 8 0 ON 208.199 - 471 -1.97944	0 -1.09343	210.384	0 -1.03275	210.973
E== Summary for buffer_size: 14M = DP: [forward] lelta% p95 delta%% p9 DPOption.DDP_CPP_CORE 211.675 0 212.6 DPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_SYNC_REDUCTION DDPOption.PYTHON_DDP_SYNC_REDUCTION	Mean 9 delta% 210.501 8 0 ON 208.199 471 -1.97944 N 208.285	0 -1.09343 -1.0527	210.384	0 -1.03275	210.973
=== Summary for buffer_size: 14M = DDP: [forward] delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_SYNC_REDUCTION DDPOption.PYTHON_DDP_SYNC_REDUCTION DDPOption.PYTHON_DDP_SYNC_REDUCTION	Mean 9 delta% 210.501 8 0 ON 208.199 471 -1.97944 N 208.285	0 -1.09343 -1.0527	210.384	0 -1.03275	210.973
=== Summary for buffer_size: 14M = DDP: [forward] delta%	Mean 9 delta% 210.501 8 0 ON 208.199 471 -1.97944 N 208.285 591 -1.92271	0 -1.09343 -1.0527	210.384 208.211 208.27	0 -1.03275 -1.0047	210.973 208.334 208.434
== Summary for buffer_size: 14M = DP: [forward] elta% p95 delta%% p9 DPOption.DDP_CPP_CORE	== Mean delta% 210.501 000 208.199 471 -1.97944 208.285 - 591 -1.92271 Mean delta%	0 -1.09343 -1.0527 delta%	210.384 208.211 208.27	0 -1.03275 -1.0047	210.973 208.334 208.434
== Summary for buffer_size: 14M = DP: [forward] elta% p95 delta%% p9 DPOption.DDP_CPP_CORE	== Mean delta% 210.501 000 208.199 471 -1.97944 208.285 - 591 -1.92271 Mean delta%	0 -1.09343 -1.0527 delta%	210.384 208.211 208.27	0 -1.03275 -1.0047	210.973 208.334 208.434
== Summary for buffer_size: 14M = DP: [forward] lelta% p95 delta%% p9	Mean Mean Mean Mean Mean Mean 210.501 000 000 000 000 000 000 00	0 -1.09343 -1.0527 delta%	210.384 208.211 208.27 mean	0 -1.03275 -1.0047 delta%	210.973 208.334 208.434 p90
SEE Summary for buffer_size: 14M = DDP: [forward] Delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE 211.675 0 212.6 DDPOption.PYTHON_DDP_ASYNC_REDUCTION 1.25111 208.375 -1.55885 208. DDPOption.PYTHON_DDP_SYNC_REDUCTION 1.20361 208.49 -1.50462 208. DDP: [backward] DDP: [backward] DDP: [backward] DDP: [backward]	Mean 9 delta% 210.501 8 0 ON 208.199 - 471 -1.97944 N 208.285 - 591 -1.92271 Mean 9 delta% 475.438	0 -1.09343 -1.0527 delta%	210.384 208.211 208.27 mean	0 -1.03275 -1.0047 delta%	210.973 208.334 208.434 p90
== Summary for buffer_size: 14M = DP: [forward] DP: [forward] DP: [forward] DP: [forward] DP: [backward]	== Mean 9 delta% 210.501 8 0 ON 208.199 - 471 -1.97944 N 208.285 - 591 -1.92271 Mean 9 delta% 475.438 1 0	0 -1.09343 -1.0527 delta%	210.384 208.211 208.27 mean 475.465	0 -1.03275 -1.0047 delta%	210.973 208.334 208.434 p90
=== Summary for buffer_size: 14M = DDP: [forward] delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION 1.25111 208.375 -1.55885 208. DDPOption.PYTHON_DDP_SYNC_REDUCTION 1.20361 208.49 -1.50462 208. DDP: [backward] delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_ASYNC_REDUCTION	Mean	0 -1.09343 -1.0527 delta%	210.384 208.211 208.27 mean 475.465	0 -1.03275 -1.0047 delta%	210.973 208.334 208.434 p90
=== Summary for buffer_size: 14M = DDP: [forward] delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION-1.25111 208.375 -1.55885 208.DDPOption.PYTHON_DDP_SYNC_REDUCTION-1.20361 208.49 -1.50462 208. DDP: [backward] delta% p95 delta%% p9 DDP: [backward] delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION-1.3729 530.555 11.3654 532.4	Mean Mean	0 -1.09343 -1.0527 delta% 0	210.384 208.211 208.27 mean 475.465 527.475	0 -1.03275 -1.0047 delta% 0 10.9388	210.973 208.334 208.434 p90 476.153 530.305
=== Summary for buffer_size: 14M = DDP: [forward] delta% p95 delta%% p9 DDPOption.DDP_CPP_CORE DDPOption.PYTHON_DDP_ASYNC_REDUCTION DDPOption.PYTHON_DDP_SYNC_REDUCTION DDPOpt	Mean 9 delta%	0 -1.09343 -1.0527 delta% 0	210.384 208.211 208.27 mean 475.465 527.475	0 -1.03275 -1.0047 delta% 0 10.9388	210.973 208.334 208.434 p90 476.153 530.305

=== Summary for buffer_size: 15M === DDP: [forward] delta% p95 delta%% p99		delta%	mean	delta%	p90
DDPOption.DDP_CPP_CORE 2	210.461	0	210.391	0	210.934
0 211.032 0 211.317					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION 2			208.266	-1.01032	208.43
-1.18727 208.484 -1.20772 208.59 DDPOption.PYTHON DDP SYNC REDUCTION 2			208.226	-1.02924	208.357
-1.22186 208.422 -1.23705 208.522			200.220	1.02321	200:337
		delta%	mean	delta%	p90
delta% p95 delta%% p99					
DDPOption.DDP CPP CORE 4		0	473.82	0	474.751
0 474.806 0 475.033					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION 5	31.04	12.0476	532.847	12.4576	534.748
12.6376 535.075 12.6935 536.357	12.9093				
DDPOption.PYTHON_DDP_SYNC_REDUCTION 5			572.451	20.816	574.846
21.0838 575.131 21.1299 576.538	21.3679				
=== Summary for buffer size: 16M ===					
DDP: [forward]	Mean	delta%	mean	delta%	p90
delta% p95 delta%% p99	delta%				
DDPOption.DDP_CPP_CORE 2 0 211.985 0 212.352		0	211.473	0	211.924
DDPOption.PYTHON DDP ASYNC REDUCTION 2		-1 43535	208 349	-1 47735	208 534
-1.5998 208.588 -1.60253 208.614			200.019	1.17,00	200.001
DDPOption.PYTHON_DDP_SYNC_REDUCTION 2	208.166	-1.52366	208.154	-1.56983	208.277
-1.72072 208.32 -1.7291 208.387	-1.86733	3			
DDP: [backward]	Mean	delta%	mean	del+32	09g
delta% p95 delta%% p99		ueita ₀	illeaii	dertas	þao
DDPOption.DDP_CPP_CORE 4	171.396	0	471.431	0	471.741
0 471.807 0 472.008					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION 5			532.087	12.8663	534.801
13.3674 535.472 13.4938 536.216 DDPOption.PYTHON DDP SYNC REDUCTION 5			573.693	21.6918	576 25
22.1538 577.139 22.3251 578.038		Z1.U93/	313.033	21.0918	310.23
22.3231 370.030	22.4000				
=== Summary for buffer_size: 17M ===					

	=	delta%%	=					
						010 456		010 700
DDPOption		_CORE 0		210.329	U	210.456	U	210.703
		DDP ASYNC R			_1 02248	208 168	_1 08692	208 31
	_	-1.15169				200.100	1.00052	200.31
		DDP SYNC RE				208.081	-1.1281	208.288
	_	-1.16578						
DDP: [bac	kward]			Mean	delta%	mean	delta%	p90
delta%	p95	delta%%	p99	delta%				
		_CORE			0	485.197	0	486.18
		0						
	_	DDP_ASYNC_R				526.905	8.59613	534.23
		9.97259						
=	_	DDP_SYNC_RE				576.127	18.7408	578.749
19.04	579.275	19.0214	580.449	18.9443				
	_	uffer_size:						
DDP: [for	-				delta%	mean	delta%	p90
		delta%%						
		CORE				210 297	0	210.785
=		0			O	210.297	O	210.705
		DDP ASYNC R			-0.92151	208.417	-0.893902	208.535
	_	-1.16772						
		DDP SYNC RE				208.241	-0.977957	208.412
-1.12568	208.437	-1.22291	208.468	-1.3995	5			
DDP: [bac	kwardl			Mean	delta%	mean	delta%	0ea
delta%	p95	delta%%	p99					-
DDPOption	.DDP_CPP	CORE		480.523	0	480.491	0	481.178
0 4	81.298	0	481.661	0				
		DDP_ASYNC_R				539.801	12.3435	542.149
		12.7344						
	_	DDP_SYNC_RE				561.221	16.8016	563.942
17.2003	568.921	18.2054	572.956	18.9543				
===	ry for h	uffer size:	19M ===					
DDP: [for	_	u	1 711	Mean	delta%	mean	delta	6 n90
-	-	delta%%	p99		uccu*	inculi	acrea	- P20

DDPOption.DDP CPP CORE	209.971	0	209.939	0	210.15
0 210.364 0 210.762	0				
DDPOption.PYTHON_DDP_ASYNC_REDUCTION		_0 757295	208 33	-0 76620	3 208 497
			200.33	0.70020	3 200.457
-0.7869 208.516 -0.878442 208.72					
DDPOption.PYTHON_DDP_SYNC_REDUCTION	208.311	-0.790664	208.309	-0.77657	5 208.457
-0.805903 208.487 -0.892226 208.55	7 -1.046	25			
DDP: [backward]	Mean	delta%	mean	delta%	n90
delta% p95 delta%% p99		401040		401040	Poo
DDPOption.DDP_CPP_CORE	478.77	0	478.715	0	479.343
0 479.566 0 479.833	0				
DDPOption.PYTHON DDP ASYNC REDUCTION	540.249	12.8409	538.619	12.5133	547.754
14.2719 548.267 14.3257 549.454					
DDPOption.PYTHON DDP SYNC REDUCTION			571.444	19.3702	574.852
			3/1.111	19.5702	374.032
19.925 575.923 20.0926 581.559	21.2002				
=== Summary for buffer_size: 20M ===					
DDP: [forward]	Mean	delta%	mean	delta%	p90
delta% p95 delta%% p99	delta%				
DDPOption.DDP_CPP_CORE		0	210.718	0	211.035
0 211.225 0 212.012	0				
DDPOption.PYTHON_DDP_ASYNC_REDUCTION	208.228	-1.18869	208.236	-1.17816	208.353
-1.27058 208.376 -1.34851 208.425	-1.6918	7			
DDPOption.PYTHON_DDP_SYNC_REDUCTION	208.293	-1.15816	208.277	-1.1586	208.444
-1.22736 208.521 -1.28011 208.615					
1,22,00 200,021 1,20011 200,010	1.0020	_			
DDP: [backward]	Mean	delta%	mean	delta%	p90
delta% p95 delta%% p99	delta%				
DDPOption.DDP CPP CORE	475.089	0	475.206	0	475.633
0 475.834 0 476.355					
DDPOption.PYTHON DDP ASYNC REDUCTION		15 0500	553 077	16 2060	555 351
			555.077	10.3809	JJJ.3JI
16.7605 555.897 16.8258 556.576					
DDPOption.PYTHON_DDP_SYNC_REDUCTION	574.111	20.8427	574.816	20.9615	578.774
21.6851 580.185 21.9301 586.553	23.1335				
=== Summary for buffer size: 21M ===					
-	Moss	do1+-0	mo	dol±=0	~00
DDP: [forward]		delta%	mean	ueilas	p90
delta% p95 delta%% p99					
DDPOption.DDP_CPP_CORE	210.853	0	210.825	0	211.183

0 211.308 0 211.53					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION	208.372	-1.1765	208.361	-1.16885	208.561
-1.24157 208.596 -1.28325 208.692	-1.34183	L			
DDPOption.PYTHON_DDP_SYNC_REDUCTION	208.202	-1.25715	208.198	-1.24621	208.368
-1.333 208.407 -1.37313 208.501	-1.43188	3			
DDP: [backward]	Mean	delta%	mean	delta%	090
delta% p95 delta%% p99					1
			472 000	0	472 000
DDPOption.DDP_CPP_CORE		0	4/3.282	U	473.808
0 473.933 0 474.12					
DDPOption.PYTHON_DDP_ASYNC_REDUCTION			536.046	13.2614	551.029
16.298 553.37 16.7611 554.301					
DDPOption.PYTHON_DDP_SYNC_REDUCTION	575.191	21.5296	574.89	21.4687	578.517
22.0996 578.801 22.127 583.41	23.0512				
=== Summary for buffer size: 22M ===					
DDP: [forward]	Mean	delta%	mean	delta	% p90
delta% p95 delta%% p99					1
		_			
DDPOption.DDP_CPP_CORE			210 241	0	210.864
		O	210.341	0	210.004
0 211.106 0 212.947	U				
DDPOption.PYTHON_DDP_ASYNC_REDUCTION			208.36	-0.94191	4 208.51
-1.11658 208.55 -1.21056 208.603	-2.03981	l			
	-2.03981	l			
-1.11658 208.55 -1.21056 208.603	-2.03983 208.511	l -0.918347			
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION	-2.03983 208.511	l -0.918347			
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION	-2.03983 208.511	l -0.918347			
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION	-2.03983 208.511 -1.94498	l -0.918347	208.496	-0.87738	
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805	-2.03983 208.511 -1.94498 Mean	L -0.918347 3	208.496	-0.87738	7 208.637
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward]	-2.03983 208.511 -1.94498 Mean delta%	L -0.918347 3	208.496 mean	-0.87738	7 208.637
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward]	-2.03983 208.511 -1.94498 Mean delta%	0.918347 3 delta%	208.496 mean	-0.87738	7 208.637
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta%	delta%	208.496	-0.87738 delta%	7 208.637 p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097	delta%	208.496	-0.87738 delta%	7 208.637 p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta% p99 DDPOption.DDP_CPP_CORE 0 483.234 0 484.214	-2.03983 208.511 -1.94498 Mean delta% 482.097	delta%	208.496 mean 482.406	-0.87738 delta%	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875	delta% -0.918347	208.496 mean 482.406	-0.87738 delta%	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 483.234 0 484.214 DDPOption.PYTHON_DDP_ASYNC_REDUCTION 16.4582 563.033 16.5135 563.883	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531	delta%	mean 482.406 560.893	-0.87738 delta% 0 16.2698	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81	delta% 0 16.3408 19.4387	mean 482.406 560.893	-0.87738 delta% 0 16.2698	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99 DDPOption.DDP_CPP_CORE 0 483.234 0 484.214 DDPOption.PYTHON_DDP_ASYNC_REDUCTION 16.4582 563.033 16.5135 563.883	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81	delta% 0 16.3408 19.4387	mean 482.406 560.893	-0.87738 delta% 0 16.2698	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81	delta% 0 16.3408 19.4387	mean 482.406 560.893	-0.87738 delta% 0 16.2698	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81	delta% 0 16.3408 19.4387	mean 482.406 560.893	-0.87738 delta% 0 16.2698	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81	delta% 0 16.3408 19.4387	mean 482.406 560.893	-0.87738 delta% 0 16.2698	p90
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531	delta% 0 16.3408 19.4387	mean 482.406 560.893 575.681	-0.87738 delta% 0 16.2698 19.3353	p90 483.012 562.507 578.208
-1.11658 208.55	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531	delta% 0 16.3408 19.4387	mean 482.406 560.893 575.681	-0.87738 delta% 0 16.2698 19.3353	p90 483.012 562.507 578.208
-1.11658 208.55	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531 Mean delta%	delta% -0.918347 delta% 0 16.3408 19.4387	mean 482.406 560.893 575.681 mean	-0.87738 delta% 0 16.2698 19.3353	p90 483.012 562.507 578.208
-1.11658 208.55 -1.21056 208.603 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.05606 208.656 -1.16059 208.805 DDP: [backward] delta% p95 delta%% p99	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531 Mean delta%	delta% 0 16.3408 19.4387	mean 482.406 560.893 575.681 mean	-0.87738 delta% 0 16.2698 19.3353	p90 483.012 562.507 578.208
-1.11658 208.55	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531	delta% 0 16.3408 19.4387	mean 482.406 560.893 575.681 mean	-0.87738 delta% 0 16.2698 19.3353	p90 483.012 562.507 578.208
-1.11658 208.55	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531 Mean delta% 210.215	delta% 0 16.3408 19.4387	mean 482.406 560.893 575.681 mean	-0.87738 delta% 0 16.2698 19.3353	p90 483.012 562.507 578.208
-1.11658 208.55	-2.03983 208.511 -1.94498 Mean delta% 482.097 0 560.875 16.4531 575.81 20.531 Mean delta% 210.215 0	0 delta% delta% delta% delta%	mean 482.406 560.893 575.681 mean 210.037	-0.87738 delta% 0 16.2698 19.3353 delta	p90 483.012 562.507 578.208 * p90 210.684

-1.15452 208.304 -1.43533 208.42 DDPOption.PYTHON_DDP_SYNC_REDUCTION -0.981803 208.655 -1.26914 208.70	208.427	-0.850357	208.408	-0.77528	208.616
DDP: [backward] delta% p95 delta%% p99	delta%		mean	delta%	p90
DDPOption.DDP_CPP_CORE 0 482.084 0 482.664	481.245 0	0	481.24	0	481.688
DDPOption.PYTHON_DDP_ASYNC_REDUCTION 18.0862 569.019 18.033 569.317		17.2875	566.225	17.6597	568.807
DDPOption.PYTHON_DDP_SYNC_REDUCTION 19.6453 578.183 19.9341 588.235	571.43 21.8725	18.7401	573.479	19.1671	576.317
=== Summary for buffer_size: 24M === DDP: [forward]	Mean	delta%	mean	delta ⁹	0ea ś
delta% p95 delta%% p99	delta%	401040	our	40104	o <u>F</u>
	210.227	0	210.143	0	210.604
0 210.722 0 210.87 DDPOption.PYTHON_DDP_ASYNC_REDUCTION	208.228		208.224	-0.91313	5 208.358
-1.06628 208.426 -1.0898 208.654 DDPOption.PYTHON_DDP_SYNC_REDUCTION -1.02967 208.484 -1.06235 208.557	208.23	-0.949705	208.218	-0.915672	2 208.435
DDP: [backward] delta% p95 delta%% p99	Mean delta%	delta%	mean	delta%	p90
DDPOption.DDP_CPP_CORE 0 479.68 0 480.215	478.429	0	478.608	0	479.358
DDPOption.PYTHON_DDP_ASYNC_REDUCTION 18.0998 567.022 18.2083 572.705			548.179	14.536	566.12
DDPOption.PYTHON_DDP_SYNC_REDUCTION 19.8176 574.741 19.8175 582.827	572.728	19.71	572.48	19.6134	574.355
=== Summary for buffer_size: 25M ===					
DDP: [forward] delta% p95 delta%% p99		delta%	mean	delta%	p90
DDPOption.DDP_CPP_CORE	210.478	0	210.405	0	210.763
0 210.963 0 212.506 DDPOption.PYTHON DDP ASYNC REDUCTION		-1.00473	208.344	-0.979519	208.545
-1.05199 208.591 -1.12464 208.724 DDPOption.PYTHON DDP SYNC REDUCTION	-1.77946	ő			
PPI OPCION. FILLMON DDE SINC KEDUCIION	200.291	.1.02007	200.209	-1.00302	200.429

				1 00727	7			
-1.10732	208.449	-1.1920	5 208.495	-1.00/3/				
DDP: [ba	ckward]			Mean	delta%	mean	delta%	p90
delta%	p95	delta%%	p99	delta%				
	on.DDP CPF			178 977	0	178 Q51	0	479.407
	_	0	480.253	0	0	470.331	O	473.407
		DDP ASYNC I			18.8573	573.043	19.6453	574.805
	_	20.1046						
DDPOptio	n.PYTHON_	DDP_SYNC_R	EDUCTION	572.347	19.4937	573.636	19.7691	575.768
20.1	576.877	20.292	577.819	20.3156				
	_	ouffer_size	: 26M ===					
DDP: [fo	-	1-100	0.0		delta%	mean	delta	% b3
	-	delta%%	=					
DPOpt.io	n.DDP CPF	CORE		210.289	0	210.129	0	210.91
-	_	0						
DPOptio	n.PYTHON_	DDP_ASYNC_I	REDUCTION	208.237	-0.975918	208.204	-0.91614	208.43
	208 573	-1.3166	7 208.692	_1 90987	7			
-1.17554	200.575	1.0100		1.0000	/			
DDPOptio	on.PYTHON_	DDP_SYNC_R	EDUCTION	208.108	-1.03731	208.098	-0.96686	9 208.26
DDPOptio	on.PYTHON_		EDUCTION	208.108	-1.03731	208.098	-0.96686	9 208.26
DDPOptio	on.PYTHON_	DDP_SYNC_R	EDUCTION	208.108	-1.03731	208.098	-0.96686	9 208.26
DDPOptio -1.25662	on.PYTHON_	DDP_SYNC_R	EDUCTION	208.108	-1.03731			
DDPOptio -1.25662 DDP: [ba	on.PYTHON_ 2 208.335 ackward]	DDP_SYNC_R	EDUCTION 208.446	208.108 -2.02556 Mean	-1.03731 5			
DDPOptio -1.25662 DDP: [ba	on.PYTHON_ 2 208.335 ackward]	DDP_SYNC_RI	EDUCTION 208.446	208.108 -2.02556 Mean	-1.03731 5			
DDPOptio -1.25662 DDP: [ba	on.PYTHON_ 2 208.335 ackward]	DDP_SYNC_RI	EDUCTION 208.446	208.108 -2.02556 Mean	-1.03731 5			
DDPOptio -1.25662 DDP: [ba delta%	on.PYTHON_ 2 208.335 ackward]	DDP_SYNC_RI	EDUCTION 208.446	208.108 -2.02556 Mean delta%	-1.03731 5		delta%	
DDPOptio -1.25662 DDP: [ba delta% DDPOptio	p95	DDP_SYNC_RI	208.446 208.99 p99	208.108 -2.02556 Mean delta%	-1.03731 5 delta%	mean	delta%	p90
DDPOptio -1.25662 DDP: [ba delta% DDPOptio) 4	p95 on.DDP_CPF	delta%% CCORE ODP_ASYNC_1	p99 476.782 REDUCTION	208.108 -2.02556 Mean delta% 475.649 0 574.232	-1.03731 5 delta%	mean	delta%	p90 476.438
DDPOptio DDP: [ba Relta% DDPOptio DDPOptio DDPOptio	p95 n.DDP_CPF 176.584 n.PYTHON_ 578.914	DDP_SYNC_RI	p99 476.782 REDUCTION 579.428	Mean delta%	-1.03731 6 delta% 0 20.726	mean 475.81 574.333	delta% 0 20.7063	p90 476.438 577.995
DPOptio 1.25662 DP: [ba lelta% DPOptio 4 DPOptio 21.316 DPOptio	p95 on.DDP_CPE 476.584 on.PYTHON_ 578.914 on.PYTHON_	DDP_SYNC_RI delta%% CORE DDP_ASYNC_RI DDP_SYNC_RI DDP_SYNC_RI	p99 476.782 REDUCTION 579.428 EDUCTION	Mean delta%	-1.03731 6 delta% 0 20.726	mean 475.81 574.333	delta% 0 20.7063	p90 476.438 577.995
DDPOptio DDP: [ba delta% DDPOptio DDPOptio DDPOptio DDPOptio	p95 on.DDP_CPE 476.584 on.PYTHON_ 578.914 on.PYTHON_	DDP_SYNC_RI	p99 476.782 REDUCTION 579.428 EDUCTION	Mean delta%	-1.03731 6 delta% 0 20.726	mean 475.81 574.333	delta% 0 20.7063	p90 476.438 577.995
DDPOptio -1.25662 DDP: [ba delta% DDPOptio) 4 DDPOptio 21.316 DDPOptio 21.221	pp. PYTHON_2 208.335 ackward] pp5	DDP_SYNC_RI	p99 476.782 REDUCTION 579.428 EDUCTION 578.905	Mean delta%	-1.03731 6 delta% 0 20.726	mean 475.81 574.333	delta% 0 20.7063	p90 476.438 577.995
DDPOptio -1.25662 DDP: [ba delta% DDPOptio) 4 DDPOptio 21.316 DDPOptio 21.221	en.PYTHON_ 2 208.335 ackward] p95 cn.DDP_CPF 476.584 cn.PYTHON_ 578.914 cn.PYTHON_ 578.45	DDP_SYNC_RI delta%% CORE DDP_ASYNC_RI DDP_SYNC_RI DDP_SYNC_RI	p99 476.782 REDUCTION 579.428 EDUCTION 578.905	208.108 -2.02556 Mean delta% 475.649 0 574.232 21.5289 574.607 21.4192	-1.03731 6 delta% 0 20.726	mean 475.81 574.333 574.994	delta% 0 20.7063 20.8453	p90 476.438 577.995 577.543
DDPOptio -1.25662 DDP: [ba delta% DDPOptio) 4 DDPOptio 21.316 DDPOptio 21.221	pon.PYTHON_ 2 208.335 ackward] p95 ackward] p95 ackward] p76.584 bn.PYTHON_ 578.914 bn.PYTHON_ 578.45 aary for kerward]	DDP_SYNC_RI	p99 476.782 REDUCTION 579.428 EDUCTION 578.905 : 27M ===	Mean delta%	-1.03731 6 delta% 0 20.726 20.8051	mean 475.81 574.333 574.994	delta% 0 20.7063 20.8453	p90 476.438 577.995 577.543
DPOptio 1.25662 DP: [ba lelta% DPOptio 4 DPOptio 1.316 DPOptio 21.321 == Summ DP: [fo	p95 ckward] p95 cn.DDP_CPF 76.584 cn.PYTHON_ 578.914 cn.PYTHON_ 578.45 cnary for keeps	delta%% delta%% CORE 0 DDP_ASYNC_N 21.4716 DDP_SYNC_N 21.3741	p99 476.782 REDUCTION 579.428 EDUCTION 578.905 : 27M ===	208.108 -2.02556 Mean delta% 475.649 0 574.232 21.5289 574.607 21.4192 Mean delta%	-1.03731 6 delta% 0 20.726 20.8051	mean 475.81 574.333 574.994	delta% 0 20.7063 20.8453	p90 476.438 577.995 577.543
DDPOptio -1.25662 DDP: [ba delta% DDPOptio) 4 DDPOptio 21.316 DDPOptio 21.221 Summ DDP: [fo	p95 on.PYTHON_ 2 208.335 ackward] p95 on.DDP_CPF 476.584 on.PYTHON_ 578.914 on.PYTHON_ 578.45 ary for k prward] p95	delta%% delta%% CORE DDP_ASYNC_RI 21.4716 DDP_SYNC_RI 21.3741 Duffer_size delta%%	p99	Mean delta% 475.649 0 574.232 21.5289 574.607 21.4192 Mean delta%	-1.03731 6 delta% 0 20.726 20.8051 delta%	mean 475.81 574.333 574.994 mean	delta% 0 20.7063 20.8453	p90 476.438 577.995 577.543
DDPOptio -1.25662 DDP: [ba delta% DDPOptio 21.316 DDPOptio 21.221 Summ DDP: [fo	p95 on.PYTHON_ 2 208.335 ackward] p95 on.DDP_CPF 476.584 on.PYTHON_ 578.914 on.PYTHON_ 578.45 ary for k prward] p95	delta%% delta%% CCORE DDP_ASYNC_N 21.4716 DDP_SYNC_R 21.3741 cuffer_size delta%%	p99	Mean delta% 475.649 0 574.232 21.5289 574.607 21.4192 Mean delta%	-1.03731 6 delta% 0 20.726 20.8051 delta%	mean 475.81 574.333 574.994 mean	delta% 0 20.7063 20.8453	p90 476.438 577.995 577.543
DDPOptio 1.25662 DDP: [ba delta% DDPOptio 0 4 DDPOptio 21.316 DDPOptio 21.221 === Summ DDP: [fo delta%	pon.PYTHON_ 2 208.335 ackward] p95 ackward] p95 ackward] p76.584 an.PYTHON_ 578.914 an.PYTHON_ 578.45 ary for k	delta%% -1.4294 delta%% -2.CORE 0 DDP_ASYNC_N 21.4716 DDP_SYNC_N 21.3741 ouffer_size delta%% CCORE	p99 476.782 REDUCTION 579.428 EDUCTION 578.905 : 27M === p99	Mean delta% 475.649 0 574.232 21.5289 574.607 21.4192 Mean delta% 210.39 0	-1.03731 6 delta% 0 20.726 20.8051 delta%	mean 475.81 574.333 574.994 mean 210.259	delta% 0 20.7063 20.8453 delta%	p90 476.438 577.995 577.543
DDPOptio -1.25662 DDP: [ba delta% DDPOptio) 4 DDPOptio 21.316 DDPOptio 21.221 DDPOptio DDP: [fo delta% DDPOptio) DDPOptio)	on.PYTHON_ 2 208.335 ackward] p95 on.DDP_CPF 176.584 on.PYTHON_ 578.914 on.PYTHON_ 578.45 ary for k orward] p95 on.DDP_CPF 211.385 on.PYTHON_	delta%% delta%% CCORE DDP_ASYNC_N 21.4716 DDP_SYNC_R 21.3741 cuffer_size delta%%	p99 476.782 REDUCTION 579.428 EDUCTION 578.905 : 27M ===	Mean delta%	-1.03731 6 delta% 0 20.726 20.8051 delta%	mean 475.81 574.333 574.994 mean 210.259	delta% 0 20.7063 20.8453 delta%	p90 476.438 577.995 577.543
DDPOptio -1.25662 DDP: [ba delta% DDPOptio 21.316 DDPOptio 21.221 DDPOptio DDPOptio -1.10633	on.PYTHON_ 2 208.335 ackward]	delta%% -1.4294 delta%% -1.4294 delta%% CORE 0 DDP_ASYNC_RI 21.3741 cuffer_size delta%% CORE 0 DDP_ASYNC_RI	p99 476.782 REDUCTION 579.428 EDUCTION 578.905 : 27M === p99 211.908 REDUCTION 5 208.614	Mean delta%	-1.03731 6 delta% 0 20.726 20.8051 delta% 0 -0.964811	mean 475.81 574.333 574.994 mean 210.259 208.358	delta% 0 20.7063 20.8453 delta% 0	p90 476.438 577.995 577.543 p90 210.829 208.496
DDPOptio -1.25662 DDP: [ba delta% DDPOptio 21.316 DDPOptio 21.321 DDPOptio 21.221 DDPOptio 02.1.221 DDPOptio 02.1.221	p95 con.PYTHON_ 2 208.335 ckward] p95 con.DDP_CPF 276.584 con.PYTHON_ 578.914 con.PYTHON_ 578.45 con.PYTHON_ 208.555 con.PYTHON_ 3 208.555	delta%% delta%% CCORE DDP_ASYNC_N 21.4716 DDP_SYNC_R 21.3741 cuffer_size delta%%	p99 476.782 REDUCTION 579.428 EDUCTION 578.905 : 27M ===	Mean delta%	-1.03731 6 delta% 0 20.726 20.8051 delta% 0 -0.964811	mean 475.81 574.333 574.994 mean 210.259 208.358	delta% 0 20.7063 20.8453 delta% 0	p90 476.438 577.995 577.543 p90 210.829 208.496

DDP: [backdelta%	ckward] p95	delta%%	p99	Mean delta%	delta%	mean	delta%	p90
DDPOption.DDP_CPP_CORE				475.294	0	475.299	0	476.014
0 4	176.119	0	476.351	0				
DDPOption.PYTHON_DDP_ASYNC_REDUCTION				570.313	19.9917	572.485	20.4473	574.882
20.77	575.329	20.8371	576.284	20.9788				
DDPOption.PYTHON_DDP_SYNC_REDUCTION				571.216	20.1816	572.884	20.5313	574.973
20.7891	575.856	20.9478	576.293	20.9807				