

Enhanced Multistream Fast TCP: Rapid Bandwidth Utilization after Fast-Recovery Phase

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Supplementary Materials 1: Data of five tests to compute average of Convergence Time after fast recovery

Average for Five Tests		
Table S1. Convergence time of the protocols after fast recovery phase. (Test # 1 to 5)		
Protocol	Convergence Time (s)	
	Without any competing flow	With 4 competing flows
SCTP	8.22	8.5
TCP New Reno	8.46	8.92
Fast TCP	5.43	5.18
MFast TCP	5.43	5.18
EMFast TCP	3.87	2.31

Test # 1		
Table S1. Convergence time of the protocols after fast recovery phase.		
Protocol	Convergence Time (s)	
	Without any competing flow	With 4 competing flows
SCTP	8.22	8.25
TCP New Reno	8.46	8.65
Fast TCP	5.43	5.02
MFast TCP	5.43	5.02
EMFast TCP	3.87	2.24

Test # 2		
Table S1. Convergence time of the protocols after fast recovery phase.		
Protocol	Convergence Time (s)	
	Without any competing flow	With 4 competing flows
SCTP	8.22	8.33
TCP New Reno	8.46	8.74

Fast TCP	5.43	5.08
MFast TCP	5.43	5.08
EMFast TCP	3.87	2.26

Test # 3		
Table S1. Convergence time of the protocols after fast recovery phase.		
Protocol	Convergence Time (s)	
	Without any competing flow	With 4 competing flows
SCTP	8.22	8.50
TCP New Reno	8.46	8.92
Fast TCP	5.43	5.18
MFast TCP	5.43	5.18
EMFast TCP	3.87	2.31

Test # 4		
Table S1. Convergence time of the protocols after fast recovery phase.		
Protocol	Convergence Time (s)	
	Without any competing flow	With 4 competing flows
SCTP	8.22	8.59
TCP New Reno	8.46	9.01
Fast TCP	5.43	5.23
MFast TCP	5.43	5.23
EMFast TCP	3.87	2.33

Test # 5		
Table S1. Convergence time of the protocols after fast recovery phase.		
Protocol	Convergence Time (s)	
	Without any competing flow	With 4 competing flows
SCTP	8.22	8.84
TCP New Reno	8.46	9.28
Fast TCP	5.43	5.39
MFast TCP	5.43	5.39
EMFast TCP	3.87	2.40

Supplementary Materials 2: Data of five tests to compute Average throughput

Average for Five Tests		
Table S2. End-to-end throughput of the protocols (Test # 1 to 5)		
Protocol	Throughput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1096	407
TCP New Reno	1236	397
Fast TCP	1446	430
MFast TCP	1446	430
EMFast TCP	1454	433

Test # 1		
Table S2. End-to-end throughput of the protocols		
Protocol	Throughput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1096	378.51
TCP New Reno	1236	369.21
Fast TCP	1446	399.90
MFast TCP	1446	399.90
EMFast TCP	1454	402.69

Test # 2		
Table S2. End-to-end throughput of the protocols		
Protocol	Throughput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1096	390.72
TCP New Reno	1236	381.12
Fast TCP	1446	412.80
MFast TCP	1446	412.80
EMFast TCP	1454	415.68

Test # 3		
Table S2. End-to-end throughput of the protocols		
Protocol	Throughput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1096	411.07
TCP New Reno	1236	400.97
Fast TCP	1446	434.30
MFast TCP	1446	434.30
EMFast TCP	1454	437.33

Test # 4		
Table S2. End-to-end throughput of the protocols		
Protocol	Throughput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1096	423.28
TCP New Reno	1236	412.88
Fast TCP	1446	447.20
MFast TCP	1446	447.20
EMFast TCP	1454	450.32

Test # 5		
Table S2. End-to-end throughput of the protocols		
Protocol	Throughput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1096	431.42
TCP New Reno	1236	420.82
Fast TCP	1446	455.80
MFast TCP	1446	455.80
EMFast TCP	1454	458.98

Supplementary Materials 3: Data of five tests to compute Average Goodput

Average for Five Tests		
Table S3. End-to-end goodput of the protocols (Test # 1 to 5)		
Protocol	Goodput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1043	387
TCP New Reno	1183	379
MFast TCP	1389	413
EMFast TCP	1396	415

Test # 1		
Table S3. End-to-end goodput of the protocols		
Protocol	Goodput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1043	359.91
TCP New Reno	1183	352.47
MFast TCP	1389	384.09
EMFast TCP	1396	385.95

Test # 2		
Table S3. End-to-end goodput of the protocols		
Protocol	Goodput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1043	371.52
TCP New Reno	1183	363.84
MFast TCP	1389	396.48
EMFast TCP	1396	398.40

Test # 3		
Table S3. End-to-end goodput of the protocols		
Protocol	Goodput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1043	390.87
TCP New Reno	1183	382.79
MFast TCP	1389	417.13
EMFast TCP	1396	419.15

Test # 4		
Table S3. End-to-end goodput of the protocols		
Protocol	Goodput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1043	402.48
TCP New Reno	1183	394.16

MFast TCP	1389	429.52
EMFast TCP	1396	431.60

Test # 5		
Table S3. End-to-end goodput of the protocols		
Protocol	Goodput (Kbps)	
	Without any competing flow	With 4 competing flows
SCTP	1043	410.22
TCP New Reno	1183	401.74
MFast TCP	1389	437.78
EMFast TCP	1396	439.90