# SWP 21 - Gruppe 01: Abwehr von Denial-of-Service-Angriffen durch effiziente User-Space Paketverarbeitung

Abschlussveranstaltung

21. Juli 2021

Technische Universität Ilmenau



<sup>&</sup>lt;sup>3</sup>DDoS = Distributed Denial of Service



Einfach und beliebt

<sup>&</sup>lt;sup>3</sup>DDoS = Distributed Denial of Service



Einfach und beliebt

Fast unaufhaltsam

<sup>&</sup>lt;sup>3</sup>DDoS = Distributed Denial of Service



Einfach und beliebt

Fast unaufhaltsam

Abwehr komplex und ressourcenintensiv

<sup>&</sup>lt;sup>3</sup>DDoS = Distributed Denial of Service



Einfach und beliebt

Fast unaufhaltsam

Abwehr komplex und ressourcenintensiv

Angriffsvolumen verdoppelt mindestens jährlich <sup>1</sup>

<sup>&</sup>lt;sup>3</sup>DDoS = Distributed Denial of Service



<sup>&</sup>lt;sup>1</sup>ns-cdn.neustar.biz

Einfach und beliebt

Fast unaufhaltsam

Abwehr komplex und ressourcenintensiv

Angriffsvolumen verdoppelt mindestens jährlich <sup>1</sup>

Schäden bei  $\sim$ 323.400 Euro je Stunde  $^2$ 

<sup>&</sup>lt;sup>3</sup>DDoS = Distributed Denial of Service

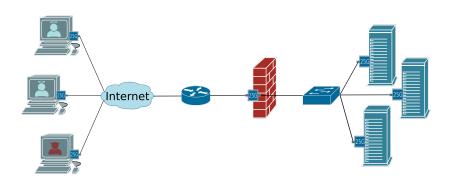


<sup>&</sup>lt;sup>1</sup>ns-cdn neustar biz

<sup>&</sup>lt;sup>2</sup>https://it-service.network

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1860   14   1860   18	Win-ESSS Lan-0 Win-ESSS Lan-0 B92119 Win-E4240 Lan-5217 B92119 Win-E4240 Lan-5216 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5217 B92119 Win-E4240 Lan-5219 B92119 Win-E4240 Lan-5219 B92119 Win-E4240 Lan-5219 B92119 Win-E4240 Lan-5219
1809   145   1809   1	Win-ESSS Lan-0 Win-ESSS Lan-0 B92119 Win-E4240 Lan-5217 B92119 Win-E4240 Lan-5216 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5266 B92119 Win-E4240 Lan-5217 B92119 Win-E4240 Lan-5219 B92119 Win-E4240 Lan-5219 B92119 Win-E4240 Lan-5219 B92119 Win-E4240 Lan-5219
1809   145   1809   1	139212 Win-64490 Lan-34096 392129 Win-64490 Lan-24120 392129 Win-64240 Lan-3216 Win-65351 Lan-0 392129 Win-64240 Lan-3560 392129 Win-64240 Lan-32696 47698670 Ack-921392129 Win-64240 Win-65351 Lan-0 392129 Win-64240 Lan-5217 392129 Win-64240 Lan-32696
1869   1669	139212 Win-64490 Lan-34096 392129 Win-64490 Lan-24120 392129 Win-64240 Lan-3216 Win-65351 Lan-0 392129 Win-64240 Lan-3560 392129 Win-64240 Lan-32696 47698670 Ack-921392129 Win-64240 Win-65351 Lan-0 392129 Win-64240 Lan-5217 392129 Win-64240 Lan-32696
1506  155  155  155  155  155  155  155  15	392129 Win-6535 Lan-3216 Win-6535 Lan-0 392129 Win-66240 Lan-3580 392129 Win-64240 Lan-32696 47698670 Ack-921392129 Win-64240 Win-6535 Lan-0 392129 Win-64240 Lan-5217 392129 Win-64240 Lan-3269 392129 Win-64240 Lan-3293
1869   1869	Win-65535 tan-0 392129 Win-64240 tan-5360 1392129 Win-64240 tan-32696 47608670 Ack-921392129 Win-64240 Win-65535 tan-0 392129 Win-64240 tan-52696 1392129 Win-64240 tan-32696 1392129 Win-64240 tan-32696
1500  1455/1500  1503.1 - 1503.2   170 SH4 4456 - 250 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504   1-150.2   170 SH4 4456 - 250 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504   1-150.2   170 SH4 4456 - 250 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504   1-150.2   170 SH4 4456 - 250 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504   1-150.2   170 SH4 4456 - 250 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504   1-150.2   170 SH4 4456 - 250 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 - 1504 [Pb, ACT] sen-bridges And-Pi2219 Inn-6456 (sen-Still)   1504 [Pb, ACT] sen-b	392129 Win=64240 Len=5360 1392129 Win=64240 Len=32696 47698670 Adx=921392129 Win=64240 Win=65535 Len=0 392129 Win=64240 Len=5217 1392129 Win=64240 Len=32696 1392129 Win=64240 Len=32696
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\$1,000   \$4,007   \$1,000   \$	392129 Win=64240 Len=5217 1392129 Win=64240 Len=32696 1392129 Win=64240 Len=27336
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1806 145 (1898) 1804 1-1802 170 (1414) - 130 (194, AC) (	
1865 1545999881 1803.1 - 18.0.2 TO 27376 4454 - 250 [PSA, KO) Sep-46779758 Ac-V2132123 Win-4540 Lin-2366 38555 1545999881 1803.0 - 1.00.0 TO 27376 4454 - 250 [PSA, KO) Sep-4677958 Ac-V2132123 Win-4540 Lin-2366 38555 1545999505 18.0.0 1 - 1.00.0 TO 27331[O' Windows Fill 4454 - 250 [PSA, KO) Sep-4677958 Ac-V2132123 Win-4540 Lin-2366 1545997505 18.0.0 1 - 1.00.0 TO 27331[O' Windows Fill 4454 - 250 [PSA, KO) Sep-4677950 Min-4555 Lin-2366 1545997505 18.0.0 1 - 1.00.0 TO 27331[O' Windows Fill 4454 - 250 [PSA, KO) Sep-4677950 Min-4555 Lin-2366 1545997505 18.0.0 1 - 1.00.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 154597505 18.0.0 1 - 1.00.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.00.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 1745 (TO Windows Fill 4454 - 250) [PSA, KO) Sep-4677950 Min-4555 Lin-2366 15459505 18.0.0 1 - 1.0.0.0 TO 17	392129 Win=64240 Len=5360
Lun-2247) 18593 154.95495802 10.0.0.2 10.0.0.1 TO 69 5201 4484 [ACI] Suq-92192129 Ad=847792470 Win-65535 Lun-0 18593 154.95495802 10.0.0.2 10.0.0.1 TO 69 5201 4484 [ACI] Suq-92192129 Ad=847792470 Win-65535 Lun-0 18593 154.95495803 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-9478593 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-94785933 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-9478593 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2 TO 1126 [TO Window Full 4456 5201 [954, ACI] Suq-9478593 Ad-941392129 Win-65404 10.0.0.1 10.0.0.2	1392129 Win=64240 Len=32696
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Len=1072	Win=65535 Len=0 /7856933 Ack=921392129 Win=64240
18500 1.54 95455183 10.0.0 - 10.0.0.1 TO 96 5001 - 44584 [ACK] 5mg-9/139119 Ads-48785005 km-65555 km-6 335590 154 95455583 10.0.0 - 10.0.0.1 TO 96 5001 - 44584 [ACK] 5mg-9/139119 Ads-48785005 4 5mg-9/139129 km − 5404 km − 4145 335519 154 95455583 10.0.0 - 10.0.0.2 TO 4199 4454 − 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 335519 154 95455583 10.0.0 - 10.0.0.2 TO 4199 4454 − 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 335519 154 95455583 10.0.0 - 10.0.0.2 TO 4199 4454 − 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/131219 km − 5404 km − 4145 5301 [Phys. ACK] 5mg-9/1395005 Ads-9/139500 Ads-9/1395005 Ads-9/1395005 Ads-9/139500 Ads-9/	Win=65535 Len=0
336511 154.954262840 10.0.0.1 10.0.0.2 TCP 32750 44364 5201 [PSH. ACK] Sup=847862150 Ack=921392129 Win=64240 Lun=32696 336511 154.954262840 10.0.0.1 10.0.0.2 TCP 32750 44364 5201 [PSH. ACK] Sup=847862150 Ack=921392129 Win=64240 Lun=32696	1392129 Win=64240 Len=32696
$3852124.595427008$ $10.0.0.1 - 10.0.0.2$ $70^{\circ}2854.4484 - 5011 [PS], ACI_{Sep}-80789486 Act-921392129 Win-#5231 Limited 2014 10.0.1000 10.0.0.2 10.0.2 $	1392129 Win=64240 Len=28408 Win=65535 Len=0
336514 154 054541526 10 0 0 1 10 0 0 2 TCP 4342 44364 5201 [PSH ACK] San=847023254 Ark=921302129 Win=64240 Lon=2288 336514 154 054541526 10 0 0 1 10 0 0 2 TCP 4342 44364 5201 [PSH ACK] San=847023254 Ark=921	392129 Win=64240 Len=4288
336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392129 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392 Win=64240 336516 154.954548814 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392 Win=64240 336516 154.954548814 10.0.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392 Win=64240 336516 154.954548814 10.0.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392 Win=64240 336516 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=847950238 Ack=921392 Win=	1392129 Win=64240 Lin=32696 47960238 Ack=921392129 Win=64240
Laim=28551	Win=65535 Len=0
38558 154.954790238 10.0.0.1 - 10.0.0.2 170 4199 44364 - 5201 [P54, ACX] Sup-487788789 Ack-921391279 Wnn-64204 Lun-2456 335518 154.954790238 10.0.0.1 - 10.0.0.2 170 4199 44364 - 5201 [P54, ACX] Sup-487788789 Ack-92139129 Wnn-64204 Lun-24566 33551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 10.0.0.1 - 10.0.0.2 170 23750 44364 - 5201 [P54, ACX] Sup-4877982914 (un-24506 545) 23551 154.954790234 (un-24506 545) 23551 154.95479023 (un-24506 545) 23551 154.95479023 (un-24506 545) 23551 154.95479023 (un-24506 545)	392129 Win=64240 Len=4145
336520 154 954796772 10 0 0 1 10 0 0 2 TCP 28467 44364 5701 IPSH ACKI Son=848025630 Ark=021302129 Win=64240 Lan=28408 336520 154 954796772 10 0 0 1 10 0 0 2 TCP 28467 44364 5701 IPSH ACKI Son=848025630 Ark=021302129 Win=64240 Lan=28408	1392129 Win=64240 Lan=32696 1392129 Win=64240 Lan=28408
336522 154 05501 2607 10 0 0 2 10 0 0 1 TCP 60 5201 44364 [ACK] Sen=021302120 Ark=848054038 Win=65535 Lon=0 336522 154 05501 2607 10 0 0 2 10 0 0 1 TCP 60 5201 44364 [ACK] Sen=021302120 Ark=848054038 Win=65535 Lon=0	
3653 1455519916 10.0.1 -10.0.2 107 934 9484 - 301 [PSt. AD] 549-64856038 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519916 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-64856038 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-64856338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 94484 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1272 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338 Ast-92110219 Wnn-64940 Lim-12096 13523 14565519911 10.0.1 -10.0.2 107 1270 9448 - 3021 [PSt. AD] 549-6485338	
336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848091022 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=84809102 Ack=921392129 Win=64240 336525 154.955028384 10.0.0.1 → 10.0.0.2 TCP 28605 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=84800000000000000000000000000000000000	1392129 Win=64240 Liin=32696 148091022 Ack=921392129 Win=64240
Lam=28551 35555 1540-55970025 10.00.2 - 10.00.1 TCP 60 5201 - 44354 [ACK] Seq-921392129 Ack-848055510 Wn-65535 Lam=0 35556 1540-55970025 10.00.2 - 10.00.1 TCP 60 5201 - 44364 [ACK] Seq-921392129 Ack-848055510 Wn-65535 Lam=0	Wn=65535 Len=0
38527 154:95510516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 38527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 154:955101516 10.0.0.110.0.0.2 TCP 1126 [TCP Window Full] 443645201 [PSH, ACK] Seq-848119573 Ack-921392129 Win-64240 385527 [PSH, ACK] Seq	
36528 55-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Wm-65251 Lm-0 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Wm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0.1 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-955297996 10.0.2 - 10.0.0 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65240 Lm-29/3 336528 15-952097996 10.0.0 TOP-05 50:14456 [ACK] Seq-921392129 Act-98420565 Mm-65200 Lm-29/3 336528 15-95209799 10.0.0 TOP-	Win=65535 Len=0 302129 Win=64240 Len=3023
336530 154.955312203 10.0.0.1 → 10.0.0.2 TCP 32750 44364 → 5201 [PSH. ACK] Sag=848123718 Ack=921392129 Win=64240 Lan=32696 336530 154.955312203 10.0.0.1 → 10.0.0.2 TCP 32750 44364 → 5201 [PSH. ACK] Sag=848123718 Ack=921392129 Win=64240 Lan=32696 336530 154.955312203 10.0.0.1 → 10.0.0.2 TCP 32750 44364 → 5201 [PSH. ACK] Sag=848123718 Ack=921392129 Win=64240 Lan=32696	
38531 15455317941 10.0.0.1 - 10.0.0.2 TO 29334 44364 5301 [P91, ACI] Sept-98435641 4.46-921 292129 Win-95351 Lat-95 336531 154555317941 10.0.0.1 - 10.0.0.2 TO 29354 44364 5301 [P91, ACI] Sept-98435641 4.46-921 292129 Win-95351 Lat-95 336531 154555317941 10.0.0.2 - 10.0.0.2 TO 29354 44364 5301 [P91, ACI] Sept-981392129 44964 - 5301 [P91, ACI] Sept-98139212	1392129 Win=64240 Len=29480 Win=65535 Len=0
$336533154.955541233$ $10.0.0.1 \rightarrow 10.0.0.2$ TCP $327044364 \rightarrow 5201$ [PSH, ACK] Seq=848185894 Ack=921392129 Win=64240 Len=3216 336533154.955541233 $10.0.0.1 \rightarrow 10.0.0.2$ TCP $327044364 \rightarrow 5201$ [PSH, ACK] Seq=848185894 Ack=921392129 Win=64240 Len=3216	392129 Win=64240 Len=3216
38551 54:595554841 10.0.0.110.0.0.2 170 32750 443645301 [P94, AOX] Saq-84818911.0 Act-921392129 War-6240 acm-32966 336531 154:5955544841 10.0.0.110.0.0.2 170 32750 443645301 [P94, AOX] Saq-84818911.0 Act-921392129 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-9213921 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-921392 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-921392 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-921392 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 Warnow Full 443645301 [P94, AOX] Saq-84818911.0 Act-921392 War-6240 335531 154:59555026 10.0.0.110.0.0.2 170 29577 [T07 War-6240 335531 154:5955026 10.0.0.110.0.0.2 170 29577 [T07 War-6240 335531 154:5955404 10.0.0.110.0.0.2 170 29577 [T07 War-6240 335531 154:5955404 10.0.0.110.0.0.2 170 29577 [T07 War-6240 335531 154:5955404 10.0.0.110.0.0.2 170 29577 [T07 War-6240 33531 154:5955404 10.0.0.110.0.0.2 170 29577 [T07 War-6240 33531 154:5955404 10.0.0.110.0.0.2 17	1392129 Win=64240 Liin=32696 148221806 Ack=921392129 Win=64240
List=29623	Wn=65535 Len=0
336537 154.955779484 10.0.0.1 → 10.0.0.2 TCP 3127 44364 → 5201 [PSH. ACK] Seg=848251429 Ack=921 392129 Win=64240 Len=3073 336537 154.955779484 10.0.0.1 → 10.0.0.2 TCP 3127 44364 → 5201 [PSH. ACK] Seg=848251429 Ack=921	
336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Lan=29480 336539 154.955794362 10.0.0.1 → 10.0.0.2 TCP 29534 44364 → 5201 [PSH. ACK] Sag=848287198 Ack=921392129 Win=64240 Min=64240 Min=64240 Min=64240 Min=64240 Min=64240 Min=64240 Min=64240 Min=64240 Min=642	1392129 Win=64240 Len=29480
336540 154.956015212 10.0.0.2 → 10.0.0.1 TCP 60 5201 → 44364 [ACK] Sec=921392129 Ack=848316678 Win=65535 Len=0 336540 154.956015212 10.0.0.2 → 10.0.0.1 TCP 60 5201 → 44364 [ACK] Sec=921392129 Ack=848316678	Win=65535 Len=0
336542 154.956028561 10.0.0.1 → 10.0.0.2 TCP 32750 44364 → 5201 [PSH, ACK] Seq=848319894 Ack=921392129 Win=64240 Len=32696 336542 154.956028561 10.0.0.1 → 10.0.0.2 TCP 32750 44364 → 5201 [PSH, ACK] Seq=848319894 Ack=92	1392129 Win=64240 Len=32696
36543 154-95603784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-84835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-81835299 Adx-921392129 Win-64240 336543 154-956033784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 Adx-921392129 Win-64240 336543 154-95603784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 Adx-921392129 Win-64240 336543 154-95603784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 Adx-921392129 Win-64240 336543 154-95603784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 Adx-921392129 Win-64240 336543 154-95603784 10.0.0.1 — 10.0.0.2 TCP 29577 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 Adx-921392129 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq-8183529 [TCP Wind	
18564 15.655000070 10.0.0.2 - 10.0.0.1 170 69 5301 - 44584 [AOC] Seq-921301219 Act-688117750 Windows 12.0.2 10.0.1 170 69 5301 - 45584 [AOC] Seq-921301219 Act-688117750 Windows 12.0.2 10.0.1 170 69 5301 - 45584 [AOC] Seq-921301219 Act-688117750 Windows 12.0.2 10.0.2 170 11.0.2 170 Windows 12.0.2 10.0.2 10.0.2 10.0.2 10.0.2 10.0.	Win=65535 Len=0 8382213 Ack=921392129 Win=64240
336546 154 956250737 10 0 0 2 10 0 0 1 TCP 60 5201 44364 [ACK] San=921302129 Ark=848383285 Win=65535 Lon=0 336546 154 956250737 10 0 0 2 10 0 0 1 TCP 60 5201 44364 [ACK] San=921302129 Ark=848383285	
14599118.199140741 $100.0.2 - 100.0.1$ $107941201 - 143941[AC]$ $566-2770994557$ $Acc-770994557$ $Acc-77099557$ $Acc-7709957$ $Acc-77099557$ $Acc-7709957$	
145395 118.199214844 10.0.0.1 → 10.0.0.2 TCP 19743 44364 → 5201 [PSH, ACK] Seq=754397293 Ack=3770094557 Win=64240 Len=19689 145395 118.199214844 10.0.0.1 → 10.0.0.2 TCP 19743 44364 → 5201 [PSH, ACK] Seq=754397293 Ack=37	70094557 Win=64240 Len=19689
45396 181.99234247 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [ACK] Sug-754419892 Ack-370094557 Win-64240 Lun-14472 145396 181.99232477 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [ACK] Sug-754419892 Ack-370094557 Win-64240 Lun-14472 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-370094557 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-370094557 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-370094557 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-370094557 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-370094557 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-370094557 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 Win-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-75441982 Ack-37009457 WIN-64240 Lun-14572 145397 181.99253772 10.0.0.1 - 10.0.0.2 TCP 14526 44364 - 5301 [PSH, ACK] Sug-7544198 Ack-37009457 WIN-64240 Lun-14572 145397 1	

336470 154.949944239 Len=1072	10.0.0.1 → 10.0.0.2	TCP 1126 [TCP Window Full] 4436 → 5201 [PSH, ACK] Seq=847331653 Ack=921392129 Win=64240	336470 154.949944239 Len=1072	10.0.0.1 → 10.0.0.2	TCP 1126 [TCP Window Full] 4436 → 5201 [PSH, ACK] Seq=8473:	31653 Ack=921392129 Win=64240
336471 154.950100275 336472 154.950105136	10.0.0.2 → 10.0.0.1 10.0.0.1 → 10.0.0.2	TCP 60 5201 44364 [ACK] Seq=921392129 Ack=847332725 Win=65535 Len=0	336471 154.950100275 336472 154.950105136	10.0.0.2 → 10.0.0.1 10.0.0.1 → 10.0.0.2	TCP 60 5201 44364 [ACK] Seq=921392129 Ack=847332725 W TCP 6343 44364 5201 [PSH, ACK] Seq=847332725 Ack=92139	in=65535 Len=0
336472 154,950105136 336473 154,950107261 336474 154,950111169	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 6343 44364 5201 [PSH, ACK] Seq=847332725 Ack=921392129 Win=64240 Len=5289 TCP 32750 44364 5201 [PSH, ACK] Seq=847339014 Ack=921392129 Win=64240 Len=32696 TCP 26318 44364 5201 [PSH, ACK] Seq=84731710 Ack=921392129 Win=64240 Len=32696	336472 154.950105136 336473 154.950107261 336474 154.950111169	10.0.0.1 10.0.0.2 10.0.0.1 10.0.0.2		
336475 154.950347060		TCP 60 5201 44364 [ACK] Sep=921392129 Ack=847397974 Win=65535 Len=0			TCP 26318 44364 5201 [PSH, ACK] Seq=847371710 Ack=9213 TCP 60 5201 44364 [ACK] Seq=921392129 Ack=847397974 W	
336476 154.950351178 336477 154.950353214	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 6486 44364 5201 [PSH, ACK] Seq=847397974 Ack=921392129 Win=64240 Len=6432 TCP 32750 44364 5201 [PSH, ACK] Seq=847404406 Ack=921392129 Win=64240 Len=32696	336476 154.950351178 336477 154.950353214	$10.0.0.1 \rightarrow 10.0.0.2$ $10.0.0.1 \rightarrow 10.0.0.2$	TCP 6486 44364 5201 [PSH, ACK] Seq=847397974 Ack=92135 TCP 32750 44364 5201 [PSH, ACK] Seq=847404406 Ack=9213	2129 Win=64240 Len=6432 92129 Win=64240 Len=32696
336478 154.950356860 Len=26407			336478 154.950356860 Len=26407			
336479 154.950573020 336480 154.950577632		TCP 60 5201 44364 [ACK] Seq=921392129 Ack=847463509 Win=65535 Len=0 TCP 6343 44364 5201 [PSH, ACK] Seq=847463509 Ack=921392129 Win=64240 Len=6289	336479 154.950573020		TCP 60 5201 44364 [ACK] Seq=921392129 Ark=847463509 W TCP 6343 44364 5201 [PSH, ACK] Seq=847463509 Ark=92135	in=65535 Len=0 0120 Win=64240 Lon=6289
336481 154.950579811		TCP 32750 44364 5201 [PSH, ACK] Seq=847469798 Ack=921392129 Win=64240 Len=32696	336481 154 950579811	10.0.0.1 10.0.0.2	TCP 32750_44364 5201 [PSH, ACK] Seq=847469798 Ack=9213	
336482 154.950583763 336483 154.950796900		TCP 60 5201 44364 [AQA DVA/APRIS28] / @ 615 LI-J en [a	336481,154,950579811 - 65 + 64,95 (60)0733	ice-Ang	TCP 32250 44364 — S201 [PSH, ACK] Siq=847469798 Ack=9213 TCP 64 44364 — S201 [PSH, ACK] Siq=847502494 Ack=9213 TCP 648 5 — S201 [PSH, ACK] Siq=847502494 Ack=9213 TCP 6486 44384 — S201 [PSH, ACK] Siq=847528758 Ack=92130	N2129 Win=64240 Len=26264 in=65535 Len=0
336484 154.950800733 336485 154.950802651	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	10 353 4486 – 201 [19. 10] Ab 384 – 407 4078 & 40. 401 2020 A 401	336484 154.950800733 336485 154.950802651	10.0.0.1 - 10.0.0.2 10.0.0.1 - 10.0.0.2	TCP 6486 44364 5201 [PSH, ACK] Seq=847528758 Ack=92139 TCP 32750 44364 5201 [PSH, ACK] Seq=847535190 Ack=9213	2129 Win=64240 Len=6432 92129 Win=64240 Len=32696
336486 154.950810402 Len=26407		ICP 20401 [ICP WINDOW PUL] 44304 → 3201 [PSR, ACK] 5404=047307680 ACK=921392129 WIN=0424	336486 154.950810402			
336487 154.950864553 336488 154.950870390		TCP 60 5201 44864 (ACC) 541-92130212) A44-947529880 WIN-55335 Lini-8 12130 WIN-5434 TCP 115 TCD Window Coll \$43.94 5201065 ACCT-641-95732 Acc - 641-951 1210 WIN-5434 TCP 60 5201 44884 (ACC) 541-92139 Acc - 947595355 WIN-55355 Lini-8	336487 154.950864553 336488 154 9508703 ID	10.0.0.2 10.0.0.1	TCP 60 5201 → 44364 [ACK] Seq=921392129 Ack=847529830 W TCP 126 [TCP Wendow Full] 44364 → 5201 [PSH ACK] Sen=847	in=65535 Len=0 504293 4rk=921392129 Win=64240
Len=1072 336489 154 951034418		durch effiziente User-	opace Pa	aketvera	TCP 60 5201 44364   ACK   34921392129 Ack-847592306 W TCP 60 5201 44364   ACK   54921392129 Ack-847592306 W TCP 60 5201 44364   ACK   54921392129 Ack-847595365 W	
336490 154.951034468		TCP 60 5201 44364 (ACK) Seq=921392129 Ack=847595365 Win=65535 Len=0	336490 154.951034468		TCP 60 5201 44364 [ACX] Saq=921392129 Ack=847595365 W	in=65535 Len=0
336491 154.951043223 336492 154.951045442		TCP 5271 44364 — 5201 [PSH, ACK] Seq=847593365 Ack=921392129 Win=64240 Len=5217 TCP 32750 44364 — 5201 [PSH, ACK] Seq=84760582 Ack=921392129 Win=64240 Len=32696 TCP 24174 44364 — 5201 [PSH, ACK] Seq=847633278 Ack=921392129 Win=64240 Len=24120	336492 154.951045442		TCP 5271 44364 5201 [PSH, ACK] Seq=847595365 Ack=92131 TCP 32750 44364 5201 [PSH, ACK] Seq=847600582 Ack=9213 TCP 24174 44364 5201 [PSH, ACK] Seq=847633278 Ack=9213	92129 Win=64240 Len=5217 92129 Win=64240 Len=32696
336493 154.951049266 336494 154.951053986	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 3270 44364 → 5201 [PSH, ACK] Sep=847657398 Ack=921392129 Win=64240 Len=3216	336493 154.951049266 336494 154.951053986	$10.0.0.1 \rightarrow 10.0.0.2$ $10.0.0.1 \rightarrow 10.0.0.2$	TCP 3270 44364 → 5201 [PSH, ACK] Seq=847657398 Ack=92139	2129 Win=64240 Len=3216
336495 154.953423471 336496 154.953427850		TCP 60 5201 44364 [ACK] Seq=921392129 Ack=847660614 Win=65535 Len=0	336495 154.953423471		TCP 60 5201 44364 [ACX] Seq=921392129 Ack=847660614 W TCP 5414 44364 5201 [PSH, ACX] Seq=847660614 Ack=92139	in=65535 Len=0
336497 154.953430344		TCP 32750 44364 — 5201 [PSH, ACK] Seq=84765074 Ack=921392129 Win=9440 Lain=5360 TCP 32750 44364 — 5201 [PSH, ACK] Seq=84765074 Ack=921392129 Win=94240 Lain=32696 TCP 27533 [TCP Window Full] 44364 — 5201 [PSH, ACK] Seq=84360670 Ack=921392129 Win=6424	336497 154.953430344		TCP 32750 44364 → 5201 [PSH, ACK] Seq=847665974 Ack=9213	
336498 154.953434179 Len=27479						
336499 154.953730566 336500 154.953734383		TCP 60 5201 44364 [ACK] Seq=9212 TCP 5271 44364 5201 [PSH, 4726149 Ack=921392129 Win=64240 Len-	336499 154.953730666 336500 154.953734383		TCP 60 5201 → 44364 [ACK] Seq=921392129 Ack=847726149 W TCP 5271 44364 → 5201 [PSH, ACK] Seq=847726149 Ack=92135	2129 Win=64240 Len=5217
336501 154.953736309 336502 154.953739877	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 32750 44364 5201 10 549 847731366 Ack-921392129 Win-64240 Len-3250 TCP 27390 44364 520 521 Seq-847764052 Ack-921392129 Win-64	836501 154.953736309 6502 154.953739877	$10.0.0.1 \rightarrow 10.0.0.2$ $10.0.0.1 \rightarrow 10.0.0.2$	TCP 32750 44364 → 5201 [PSH, ACK] Seq=847731366 Ack=9213 TCP 27390 44364 → 5201 [PSH, ACK] Seq=847764062 Ack=9213	92129 Win=64240 Len=32696 92129 Win=64240 Len=27336
336503 154.953981229 336504 154.953985821	10.0.0.2 → 10.0.0.1 10.0.0.1 → 10.0.0.2	TCP 60 5201 4435 4439	336504 154.953981229 336504 154.953985821	10.0.0.2 → 10.0.0.1 10.0.0.1 → 10.0.0.2	TCP 27390 44364 -> 5201 [PSH, ACK] Seq=847764062 Ack=9213 TCP 60 5201 -> 44364 [ACK] Seq=921392129 Ack=847791398 W TCP 5414 44364 -> 5201 [PSH, ACK] Seq=847791398 Ack=92136	in=65535 Len=0
336505 154.953990881 336506 154.953997451	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 32750 44		10.0.0.1 - 10.0.0.2	TCP 32750 44364 5201 [PSH, ACK] Seq=847796758 Ack=9213 TCP 27533 Window Fully 100 (PSH, ACK) Seq=84	92129 Win=64240 Len=32696
Len=27479						
336507 154.954058302 336508 154.954064243		TCP 60 44364 [ACK] Seq=921392129 Ack=847792470 Win=6 4n=1 TCP 1 Window Full 44364 — 5201 [PSH, ACK] Seq=847859 4k=921 29 Win=64240	36507 154.954058302 36508 154.954064243	.0.0.2 10.0.0.1 .0.0.0.1 10.0.0.2	29 60 520: 4364 [A seq=92139], 29 Ack=847792470 W 1126 [T lindow F 44364 — 5201 [PSH, ACK] Seq=8470	in=65535 Len=0 356933 Ack=921392129 Win=64240
Len=1072 336509 154.954255383		TC 44364 [ACK] Seq=921392129 Ack=847858005 y 4535 Len=0	an=1072 36509 154.954255383	10.0.0.2 → 10.0.0.1	TCP 60 520: 4364 [A. 9g-921392129 Ack-847858005 W	
336510 154.954260618 336511 154.954262840		T 4364 → 5201 [PSH, ACK] Seq=847858005 Ack=921	36510 154.954260618 5284		TCP 4199 4 5201 [Psi Seq=847858005 Ack=92135 TCP 32750 4 5201 [Psi Seq=847862150 Ack=9213	2129 Win=64240 Len=4145 92129 Win=64240 Len=32696
336512 154.954267008	10.0.0.1 10.0.0.2	44364 5201 [PSH, ACK] Seq=847894846 Ack 92120 Win=642 n=28408 01 44364 [ACK] Seq=921392129 Ack=8479 Win=65535 Len=0	16513 154,95453246	10.0.0.1 → 10.	8462 4 5201 [PSH, Ab 847894846 Ack=9213 0 520: 4364 [ACK] Seq=921s. 0 Ack=847923254 W	92129 Win=64240 Len=28408 in=65535 Len=0
336514 154,954541526 336515 154,954544628	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	4 4364 5201 [95H_ACK] San=847923254 A 1392129 Win=6424 =4288	36514 154.954541526 36515 154.954544628	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	342 4 → 5201 [PSH, ACK] Seg- 923254 Ack=92139	2129 Win=64240 Len=4288 92129 Win=64240 Len=32696
336516 154.954548814	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	P 33 44364 → 5201 [PSH, ACK] Seq=84792754 921392129 Win=642 n=32896 P 28 (TCP Window Full) 44364 → 5201 [PSH, eq=847950238 Ack=92 129 Win=6424	36516 154.954548814	10.0.0.1 - 10.0.0.2	32750 4 → 5201 [PSH, ACK] Seq 927542 Ack=9213 28605 Window Full] 44364 → 520 SH, ACK] Seq=84	7960238 Ack=921392129 Win=64240
Len=28551 336517 154.954780162	10.0.0.2 → 10.0.0.1	IP 60 5 44364 [ACK] Seq=921392129 A 988789 Win=65535 Len=0	n=28551 36517.154.954780162	0.2 10.0.0 *	/CP 60 520: 4364 Seg=92139 Ack=847988789 W	
336518 154.954789238 336519 154.954792204	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	29 32750 4 5201 [954, ACX] 54q-847	39238	10.00	TCP 32750 44504 5201 [PSrg 847992934 Ack=9213	2129 Win=64240 Len=4145 92129 Win=64240 Len=32696
336520 154.954796772 336521 154.955012628	10.0.0.1 → 10.0.0.2 10.0.0.2 → 10.0.0.1		336520 154.954796772 236521 154.955012628		TCP 28462 44364 5201 [PSH, ACK] Seq=848025630 Ack=9213 TCP 60 5201 44364 [ACK] Seq=921392129 Ack=848007942 W	92129 Win=64240 Len=28408 in=65535 Len=0
336522 154,955012697 336523 154,955019916	10.0.0.2 → 10.0.0.1 10.0.0.1 → 10.0.0.2	P 60 5201 → 44364 [ACK] 5xq	407	10.0.0.2 → 10.0.0.1 10.0.0.1 → 10.0.0.2	TCP 60 S201 44364 [ACK] Seq=921392129 Ack=848054038 W TCP 4342 44364 5201 [PSH, ACK] Seq=848054038 Ack=92139	in=65535 Len=0
336524 154.955024111		32750 44364 → 5201 [PSH, AC] =848058326 Ack=921392129 Win=642 n=32696	336524 154.9550s 336525 154.95502838		TCP 32750 44364 → 5201 [PSH, ACK] Seq=848058326 Ack=9213	92129 Win=64240 Len=32696
336525 154.955028384 Len=28551 336526 154.955097025		28605 [TCP Window Full] 443	Len=28551 336526 154.9550970			
336527 154.955101516 Len=1072	10.0.0.1 → 10.0.0.2	To 6 [TCP Window Full] 5201 [PSH, ACK] Seq=848119573 Ack=921 29 Win=64240		10.0.0.1 - 10.0.0.2	TCP 60 5201 $\rightarrow$ 44364 [ACX] Seq=921392129 Ack=848055110 W TCP 1126 [TCP Window Full] 44364 $\rightarrow$ 5201 [PSH, ACX] Seq=848:	119573 Ack=921392129 Win=64240
336528 154.955297596		TCP t 44364 [4 q=921392129 Ack=848120645 Win=65535 Lan=0	336528 154.955			
336529 154.955307856 336530 154.955312203		TCP 31, 264 529 rd, ACK] Seq=848120645 Ack=921392129 Win=6424 r=3073 rCP 327, 64 PSH, ACK] Seq=848123718 Ack=921392129 Win=642 r=32696	336529 154.95 56 336530 154 203		TCP 3127 44364 -> 5201 [PSH, ACK] Seq=848120645 Ack=92135 TCP 32750 44364 -> 5201 [PSH, ACK] Seq=848123718 Ack=9213	92129 Win=64240 Len=32696
336531 154.955317941 336532 154.955531674	10.0.0.1 → 10.0.0.2 10.0.0.2 → 10.0.0.1	TCP 29534 (PSH, ACK) Seq=848156414 Ack=921392129 Win=642 n=29480 TCP 60 5201 ACK  Seq=921392129 Ack=848185894 Win=65535 Len=0	336531.15 .17941 .5531674	$10.0.0.1 \rightarrow 10.0.0.2$ $10.0.0.2 \rightarrow 10.0.0.1$	TCP 29534 44364 → 5201 [PSH, ACK] Seq=848156414 Ack=9213 TCP 60 5201 → 44364 [ACK] Seq=921392129 Ack=848185894 W	92129 Win=64240 Len=29480
336533 154.955541233 336534 154.955544841	10.0.0.1 10.0.0.2	TCP 3270 44364 [PSH, ACK] Seq=848185894 Ack=921392129 Win=6424 TCP 32750 44364 [PSH, ACK] Seq=848189110 Ack=921392129 Win=64240 Len=32696	JSSS41233	10.0.0.1 10.0.0.2	TCP 3270 44364 → 5201 [PSH, ACK] Seq=848185894 Ack=92139	2129 Win=64240 Len=3216
336535 154.955550226	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 29677 [TCP Winds. 4364 5201 [PSH, ACK] Seq=848221806 Ack=921392129 Win=6424	05 154,955550226	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 32750 44364 5201 [PSH, ACK] Seq=848189110 Ack=9213 TCP 29677 [TCP Window Full] 44364 5201 [PSH, ACK] Seq=848	792129 Win=64240 Len=32696 3221806 Ack=921392129 Win=64240
Len=29623 336536 154.955769701		TCP 60 5201 44364 [ACK] 3 129 Ack=848251429 Win=65535 Len=0	336536 154.955769701		TCP 60 5201 44364 [ACK] Seq=921392129 Ack=848251429 W	
336537 154.955779484 336538 154.955783096		TCP 3127 44364 5201 [PSH, ACK)	336537 154.955779484 336538 154.955783096		TCP 3127 44364 → 5201 [PSH, ACK] Seq=848251429 Ack=92135 TCP 32750 44364 → 5201 [PSH, ACK] Seq=848254502 Ack=9213	2129 Win=64240 Len=3073 92129 Win=64240 Len=32696
336539 154.955794362 336540 154.956015212			336539 154.955794362 336540 154.956015212	10.0.0.1 10.0.0.2 10.0.0.2 10.0.0.1	TCP 29534 44364 5201 [PSH, ACK] Seq=848287198 Ack=9213 TCP 60 5201 44364 [ACK] Seq=921392129 Ack=848316678 W	
336541 154.956024957		TCP 60 5201 44364 [ACK] Seq=921392129 Ack=848316678 Win=65535 Len=0 TCP 3270 44364 5201 [PSH, ACK] Seq=848316678 Ack=921392129 Win=64240 Len=3216			TCP 3270 44364 → 5201 [PSH, ACK] Seq=848316678 Ack=92139	2129 Win=64240 Len=3216
336542 154.956028561 336543 154.956033784		TCP 32750 44364 → 5201 [PSH, ACK] Seq=848319894 Ack=921392129 Win=64240 Len=32696 TCP 29677 [TCP Window Full] 44364 → 5201 [PSH, ACK] Seq=848352590 Ack=921392129 Win=6424	336542 154.956028561 336543 154.956033784		TCP 32750 44364 5201 [PSH, ACK] Seq=848319894 Ack=9213 TCP 29677 [TCP Window Full] 44364 5201 [PSH, ACK] Seq=848	NZ1Z9 Win=64240 ten=32696 3352590 Ack=921392129 Win=64240
Len=29623 336544 154.956080670			Len=29623 336544 154.956080670			
336545 154.956089846 Len=1072						
336546 154.956250737 145393 118.199140741		TCP 60 5201 → 44364 [ACK] Seq=921392129 Ack=848383285 Win=65535 Len=0 TCP 54 5201 → 44364 [ACK] Seq=3770094557 Ack=754396757 Win=65535 Len=0	336546 154.956250737 145393 118.199140741		TCP 60 5201 → 44364 [ACK] Seq=921392129 Ack=848383285 W TCP 54 5201 → 44364 [ACK] Seq=3770094557 Ack=754396757 V	in=65535 Len=0 Vin=65535 Len=0
	10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 590 44364 → 5201 [ACK] Sep=754396757 Ack=3770094557 Win=64240 Len=536		10.0.0.1 → 10.0.0.2 10.0.0.1 → 10.0.0.2	TCP 590 44364 → 5201 [ACK] Seq=754396757 Ack=3770094557	Win=64240 Len=536
145395 118.199214844 145396 118.199234247		TCP 19743 44364 5201 [PSH, ACK] Seq=754397293 Ack=3770094557 Win=64240 Len=19689 TCP 14526 44364 5201 [ACK] Seq=754416982 Ack=3770094557 Win=64240 Len=14472	145395 118.199214844 145396 118.199234247		TCP 19743 44364 → 5201 [PSH, ACK] Seq=754397293 Ack=3770 TCP 14526 44364 → 5201 [ACK] Seq=754416982 Ack=37700945	57 Win=64240 Len=14472
						1094557 Win=64240 Len=18224



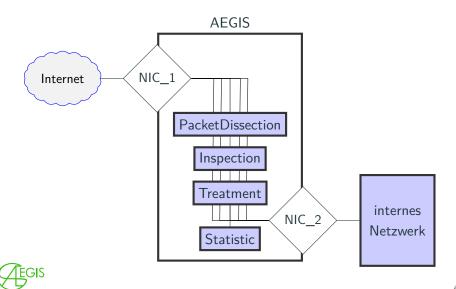














□ Abwehr von SYN Flood Attacken
 □ Abwehr von SYN-FIN/SYN-FIN-ACK Attacken
 □ Datenrate  $\geq$  5 Gbit/s <sup>4</sup>; Paketrate  $\geq$  7 Mpps <sup>5</sup>
 □ Konfiguration durch Nutzer
 □ Skalieren

<sup>&</sup>lt;sup>5</sup>Million packages per second



<sup>&</sup>lt;sup>4</sup>Gigabit per second

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☐ Leistungsfähiger Rechner mit Multicore CPU



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- $\hfill \square$  DPDK-fähige Netzwerkkarte



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- ☐ DPDK-fähige Netzwerkkarte
- ☐ Stromkosten von ~1000€ p.a.



- □ Leistungsfähiger Rechner mit Multicore CPU
- ☐ DPDK-fähige Netzwerkkarte
- ☐ Stromkosten von ~1000€ p.a.
- $\square$  Delay für Verbindungen aus dem internen Netz: 0%

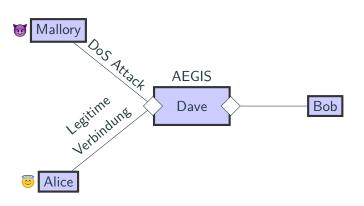


□ Leistungsfähiger Rechner mit Multicore CPU
 □ DPDK-fähige Netzwerkkarte
 □ Stromkosten von ~1000€ p.a.
 □ Delay für Verbindungen aus dem internen Netz: 0%

Delay für Verbindungen aus dem externen Netz: < 30%



#### Der Testaufbau





☐ Isolation vom Internet durch Network-Namespaces



- ☐ Isolation vom Internet durch Network-Namespaces
- $\square$  Nachbau der DPDK-Library für Unit-Tests



- ☐ Isolation vom Internet durch Network-Namespaces
- □ Nachbau der DPDK-Library für Unit-Tests
- ☐ Begrenzte Hardwareressourcen des Testbeds



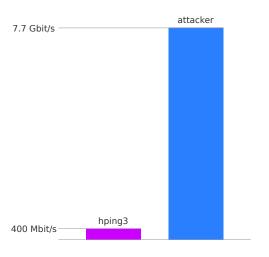
- ☐ Isolation vom Internet durch Network-Namespaces
- □ Nachbau der DPDK-Library für Unit-Tests
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- ☐ Codeeffizienz als maßgebliches Erfolgskriterium



Isolation vom Internet durch Network-Namespaces
 Nachbau der DPDK-Library für Unit-Tests
 Begrenzte Hardwareressourcen des Testbeds
 Codeeffizienz als maßgebliches Erfolgskriterium
 Notwendigkeit der Entwicklung eigener Angriffstools



# Der Angreifer









Aus Umfragen ergab sich:

Praxiserfahrung



- Praxiserfahrung
- Teamarbeit



- Praxiserfahrung
- Teamarbeit
- Team Programming



- Praxiserfahrung
- Teamarbeit
- Team Programming
- Bewältigung komplexer Aufgabenstellungen



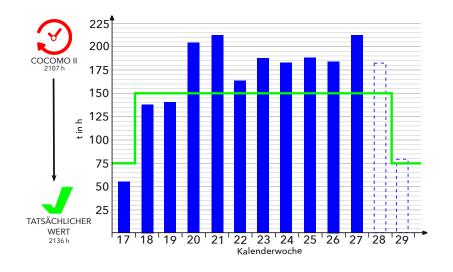
- Praxiserfahrung
- Teamarbeit
- Team Programming
- Bewältigung komplexer Aufgabenstellungen
- ⊕ Erfahrungen mit Git, LATEX, Linux und DPDK



- Praxiserfahrung
- Teamarbeit
- Team Programming
- Bewältigung komplexer Aufgabenstellungen
- Erfahrungen mit Git, LaTEX, Linux und DPDK
- ♥ Ambitionen zur Projektfortführung



## Projekt Zeitrahmen







☐ Repository auf Github



- ☐ Repository auf Github
- $\hfill \square$  Erweiterung der Abwehrmechanismen



- ☐ Repository auf Github
- ☐ Erweiterung der Abwehrmechanismen
- ☐ Statistik für Nutzer



- ☐ Repository auf Github
- ☐ Erweiterung der Abwehrmechanismen
- ☐ Statistik für Nutzer
- ☐ Effizienzsteigerung



# Raum für Fragen