Report for: Wifi Capacity Test

Thu Mar 17 15:26:33 PDT 2022

Objective

The Candela WiFi Capacity test is designed to measure performance of an Access Point when handling different amounts of WiFi Stations. The test allows the user to increase the number of stations in user defined steps for each test iteration and measure the per station and the overall throughput for each trial. Along with throughput other measurements made are client connection times, Fairness, % packet loss, DHCP times and more. The expected behavior is for the AP to be able to handle several stations (within the limitations of the AP specs) and make sure all stations get a fair amount of airtime both in the upstream and downstream. An AP that scales well will not show a significant over-all throughput decrease as more stations are added.

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Add your notes below:

Requested 1Gbps upload, UDP, on the 12 radios of system #2
Total tput looks pretty good, fairness charts show that the last 4 radios suffer low tput.
Other tests reliably show those 4 having lower tput.
Each set of 4 radios is on an internal splitter/combiner board.
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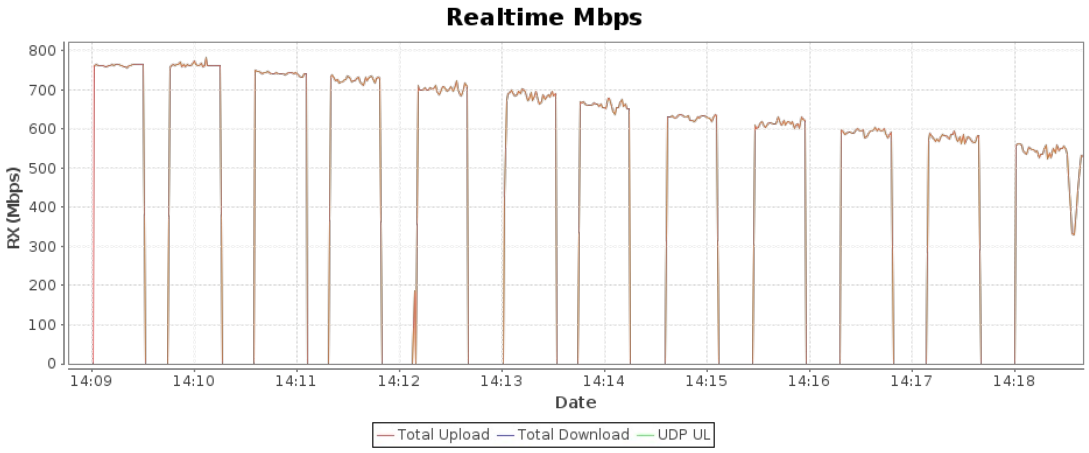
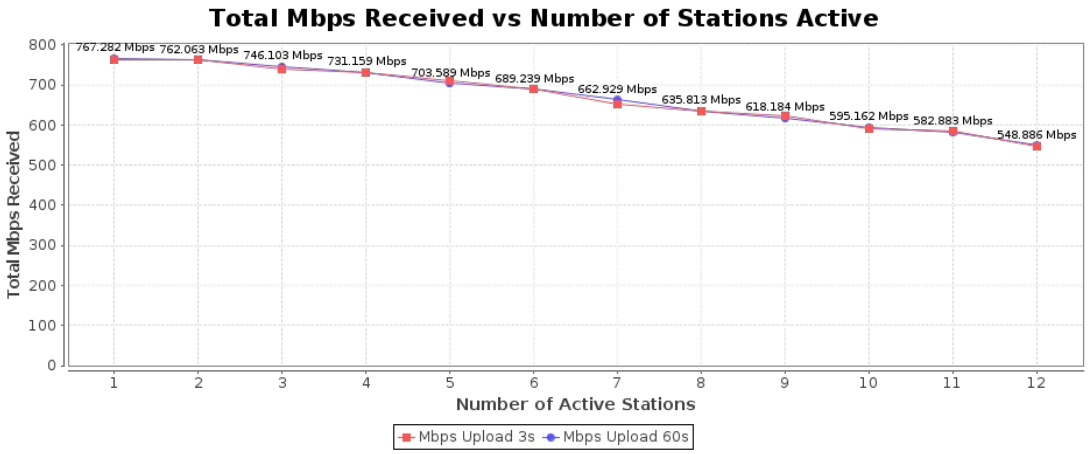
Realtime Graph shows summary download and upload RX bps of connections created by this test.

CSV Data for Realtime Mbps



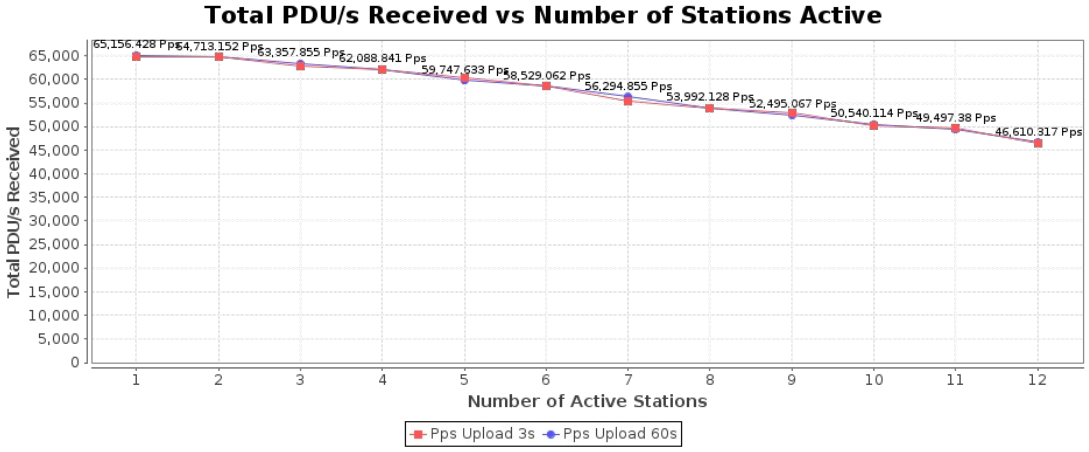
Total Megabits-per-second transferred. This only counts the protocol payload, so it will not count the Ethernet, IP, UDP, TCP or other header overhead. A well behaving system will show about the same rate as stations increase. If the rate decreases significantly as stations increase, then it is not scaling we

CSV Data for Total Mbps Received vs Number of Stations Active



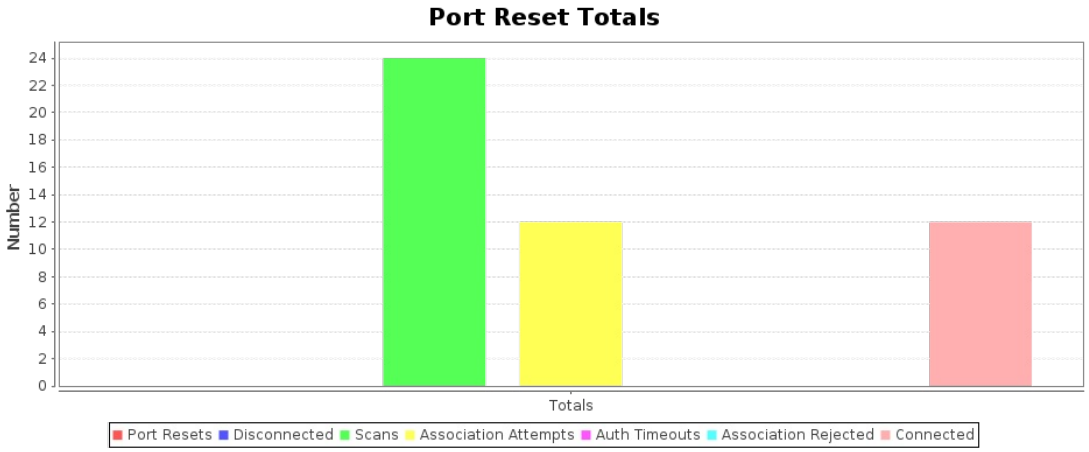
Protocol-Data-Units received. For TCP, this does not mean much, but for UDP connections, this correlates to packet size. If the PDU size is larger than what fits into a single frame, then the network stack will segment it accordingly. A well behaving system will show about the same rate as stations increase. If the rate decreases significantly as stations increase, then it is not scaling well.

CSV Data for Total PDU/s Received vs Number of Stations Active



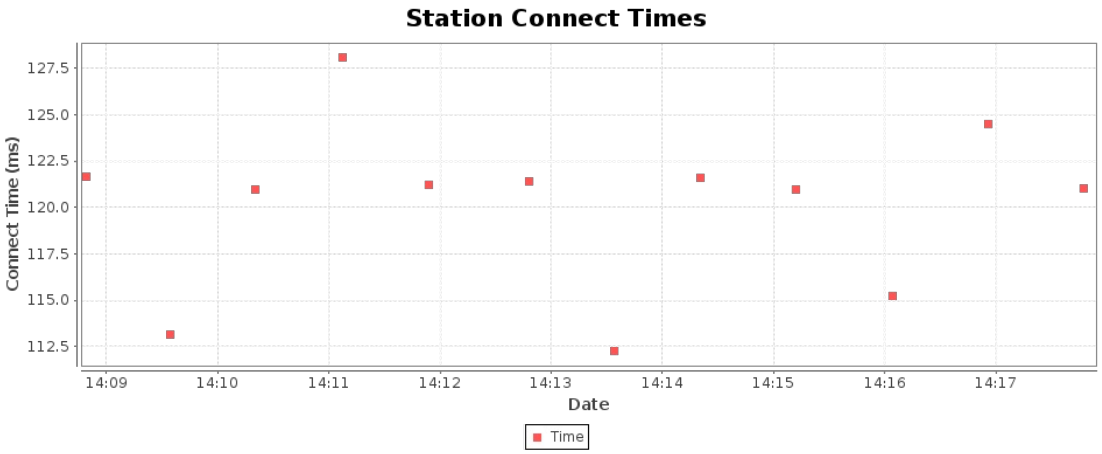
Station disconnect stats. These will be only for the last iteration. If the 'Clear Reset Counters' option is selected, the stats are cleared after the initial association. Any re-connects reported indicate a potential stability issue. Can be used for long-term stability testing in cases where you bring up all stations in one iteration and then run the test for a longer duration.

CSV Data for Port Reset Totals



Station connect time is calculated from the initial Authenticate message through the completion of Open or RSN association/authentication.

CSV Data for Station Connect Times



Wifi-Capacity Test requested values

Station Increment:	1
Loop Iterations:	Single (1)
Duration:	30 sec (30 s)
Protocol:	UDP-IPv4
Layer 4-7 Endpoint:	NONE
Payload Size:	AUTO
MSS	AUTO
Total Download Rate:	0
Total Upload Rate:	1Gbps
Percentage TCP Rate:	10% (10%)
Set Bursty Minimum Speed:	Burst Mode Disabled (-1)
Randomize Rates	true
Leave Ports Up	false
Socket buffer size:	OS Default
Settle Time:	5 sec (5 s)
Rpt Timer:	fast (1 s)
IP ToS:	Best Effort (0)
Multi-Conn:	AUTO
Show-Per-Iteration-Charts	true
Show-Per-Loop-Totals	true
Hunt-Lower-Rates	false
Show Events	true
Clear Reset Counters	false
CSV Reporting Dir	- not selected -
Build Date	Wed Mar 9 11:43:12 PST 2022
Build Version	5.4.5
Git Version	1cd42734f3bb26327d37cb8dd0915a631678f64d
Ports	1.2.eth2 1.2.wlan0 1.2.wlan1 1.2.wlan2 1.2.wlan3 1.2.wlan4 1.2.wlan5 1.2.wlan6

	1.2.wlan7 1.2.wlan8 1.2.wlan9 1.2.wlan10 1.2.wlan11
Firmware	0x80000aef, 1.1876.0
Machines	ct523c-3b89

Requested Parameters:

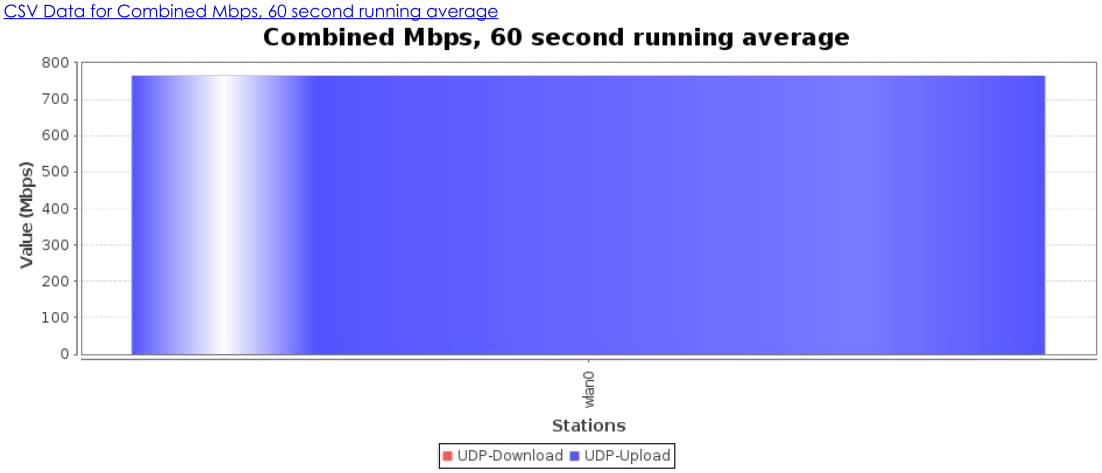
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	1000000000 (1 Gbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				1
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	764.566 Mbps	Cx Ave:	764.566 Mbps	Cx Max:	764.566 Mbps	All Cx:	764.566 Mbps
Total:								764.566 Mbps
Aggregated Rate:	Min:	764.566 Mbps	Avg:	764.566 Mbps	Max:	764.566 Mbps		

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	1000000000 (1 Gbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				1
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	2.709 GB	Cx Ave:	2.709 GB	Cx Max:	2.709 GB	All Cx:	2.709 GB
Total:								2.709 GB

This graph shows fairness. On a fair system, each station should get about the same throughput.
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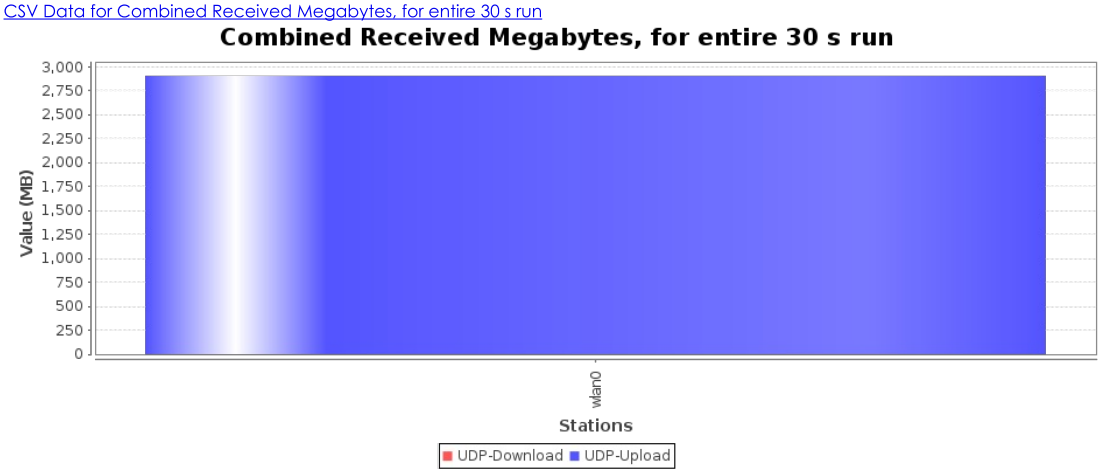
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	500000000 (500 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)

Station count:	2
Connections per station:	1
Payload (PDU) sizes:	AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	379.371 Mbps	Cx Ave:	381.478 Mbps	Cx Max:	383.585 Mbps	All Cx:	762.956 Mbps
Total:								762.956 Mbps
Aggregated Rate:	Min:	379.371 Mbps	Avg:	381.478 Mbps	Max:	383.585 Mbps		

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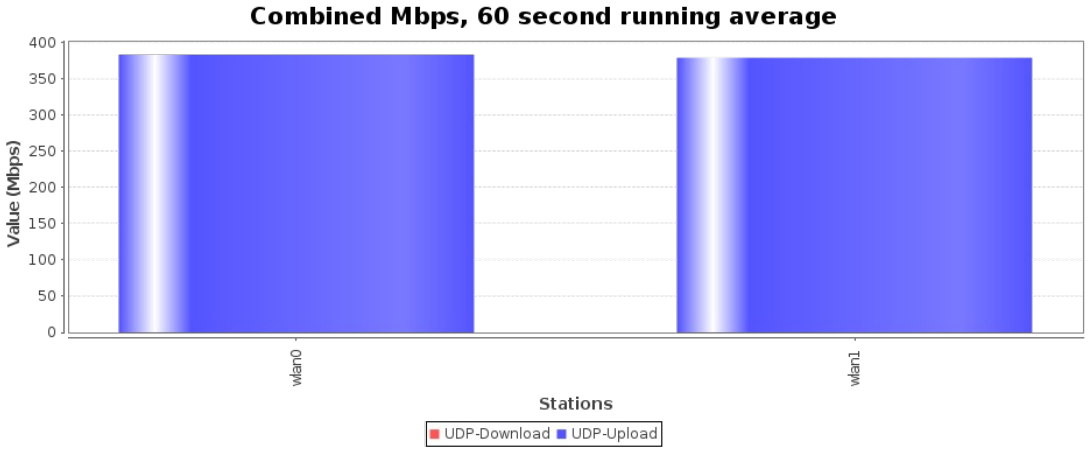
CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	500000000 (500 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				2
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	1.318 GB	Cx Ave:	1.351 GB	Cx Max:	1.384 GB	All Cx:	2.702 GB
Total:								2.702 GB

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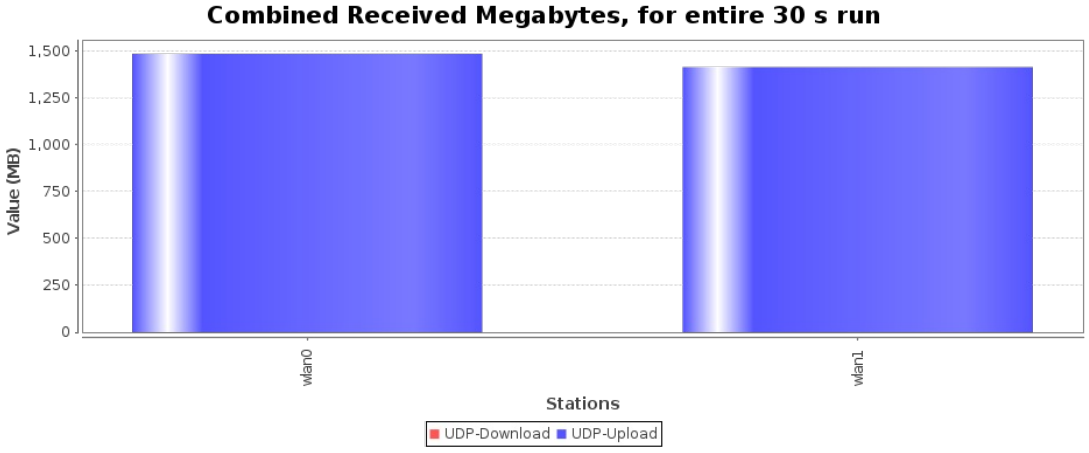
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	333333333 (333.333 Mbps)	All:	1000000000 (1 Gbps)

Total:	1000000000 (1 Gbps)
Station count:	3
Connections per station:	1
Payload (PDU) sizes:	AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	197.678 Mbps	Cx Ave:	246.809 Mbps	Cx Max:	272.427 Mbps	All Cx:	740.427 Mbps
Total:								740.427 Mbps
Aggregated Rate:	Min:	197.678 Mbps	Avg:	246.809 Mbps	Max:	272.427 Mbps		

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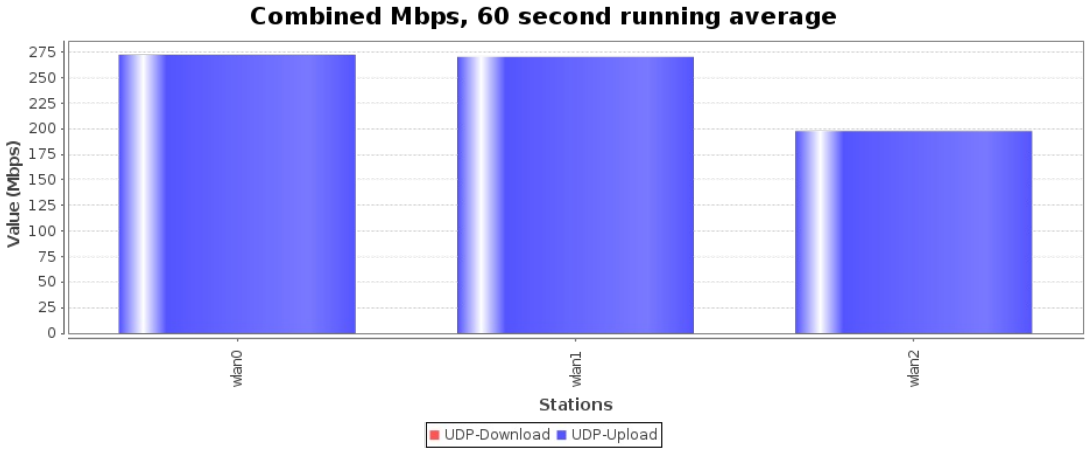
CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	333333333 (333.333 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				3
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	698.92 MB	Cx Ave:	899.561 MB	Cx Max:	1,013.929 MB	All Cx:	2.635 GB
Total:								2.635 GB

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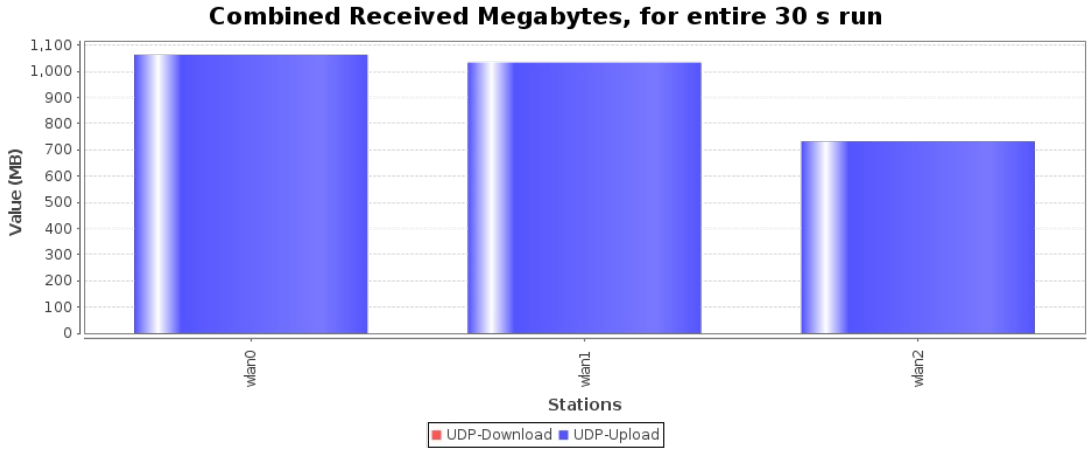
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	250000000 (250 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				4
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	139.336 Mbps	Cx Ave:	182.745 Mbps	Cx Max:	207.375 Mbps	All Cx:	730.98 Mbps
Total:								730.98 Mbps
Aggregated Rate:	Min:	139.336 Mbps	Avg:	182.745 Mbps	Max:	207.375 Mbps		

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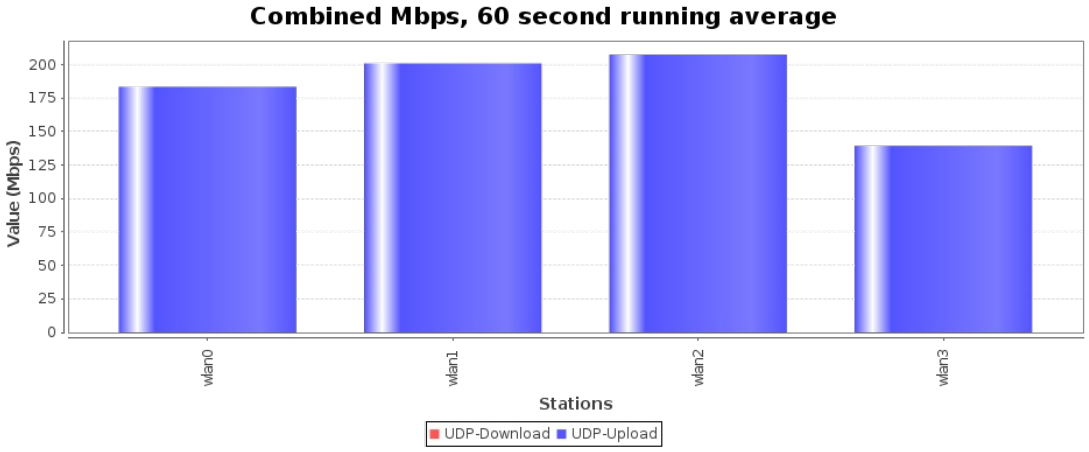
CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	250000000 (250 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				4
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	591.885 MB	Cx Ave:	661.129 MB	Cx Max:	728.306 MB	All Cx:	2.583 GB
Total:								2.583 GB

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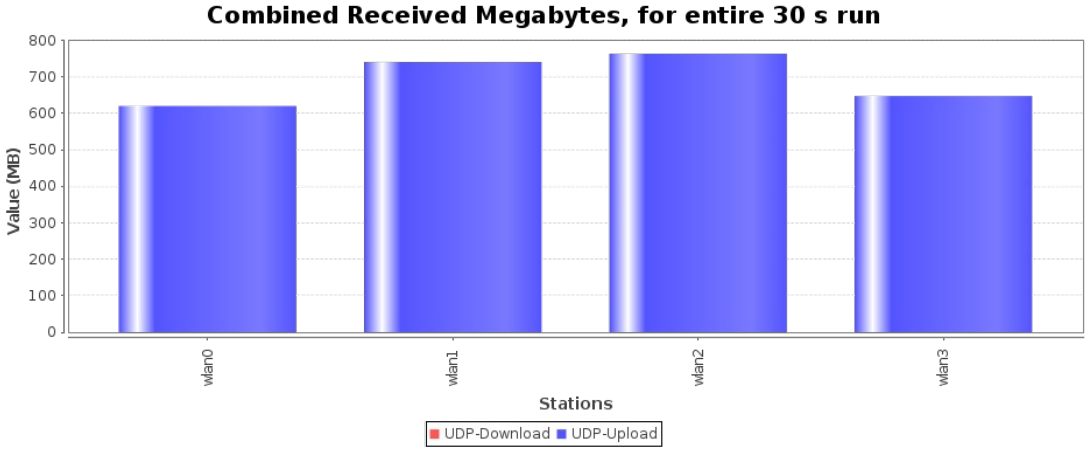
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	200000000 (200 Mbps)	All:	1000000000 (1 Gbps)

Total:	1000000000 (1 Gbps)
Station count:	5
Connections per station:	1
Payload (PDU) sizes:	AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	114.225 Mbps	Cx Ave:	142.04 Mbps	Cx Max:	183.852 Mbps	All Cx:	710.202 Mbps
Total:								710.202 Mbps
Aggregated Rate:	Min:	114.225 Mbps	Avg:	142.04 Mbps	Max:	183.852 Mbps		

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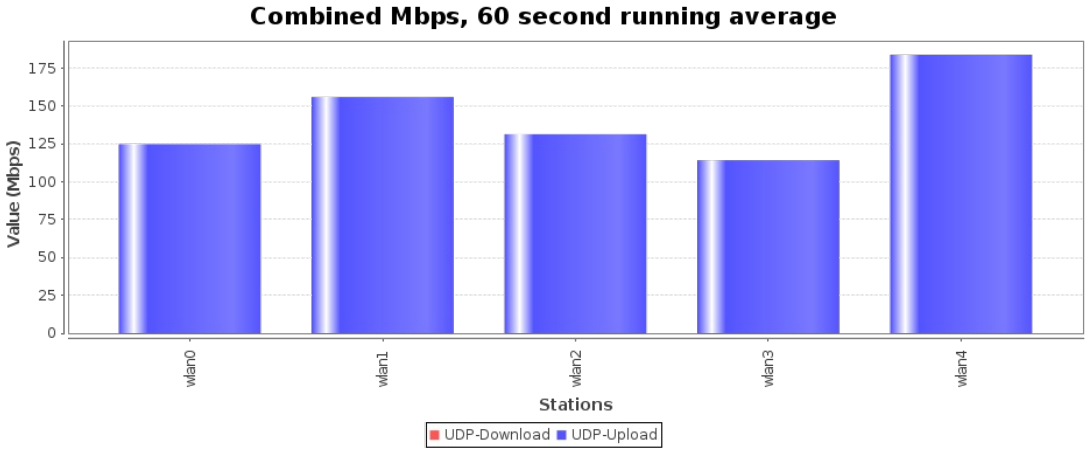
CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	200000000 (200 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				5
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	440.839 MB	Cx Ave:	511.144 MB	Cx Max:	672.325 MB	All Cx:	2.496 GB
Total:								2.496 GB

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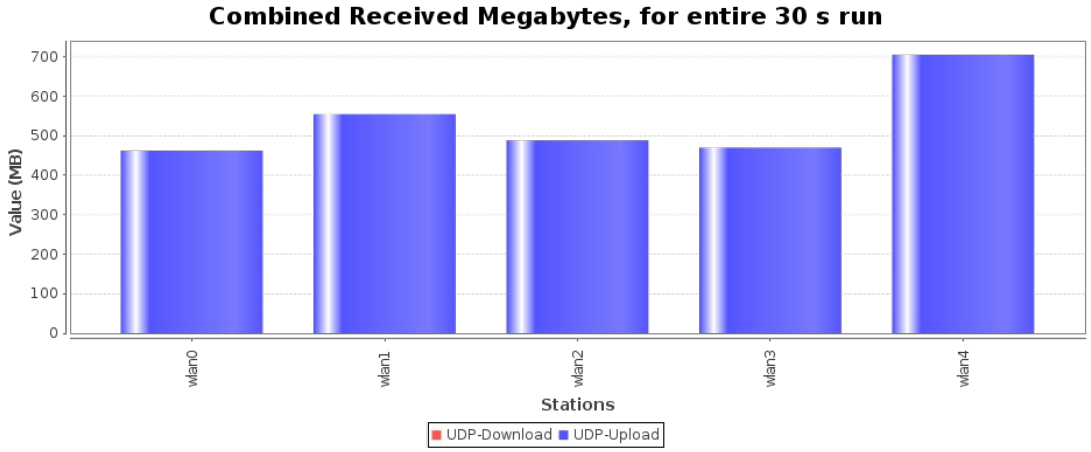
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	166666666 (166.667 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				6
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	80.165 Mbps	Cx Ave:	114.998 Mbps	Cx Max:	148.122 Mbps	All Cx:	689.988 Mbps
Total:								689.988 Mbps
Aggregated Rate:	Min:	80.165 Mbps	Avg:	114.998 Mbps	Max:	148.122 Mbps		

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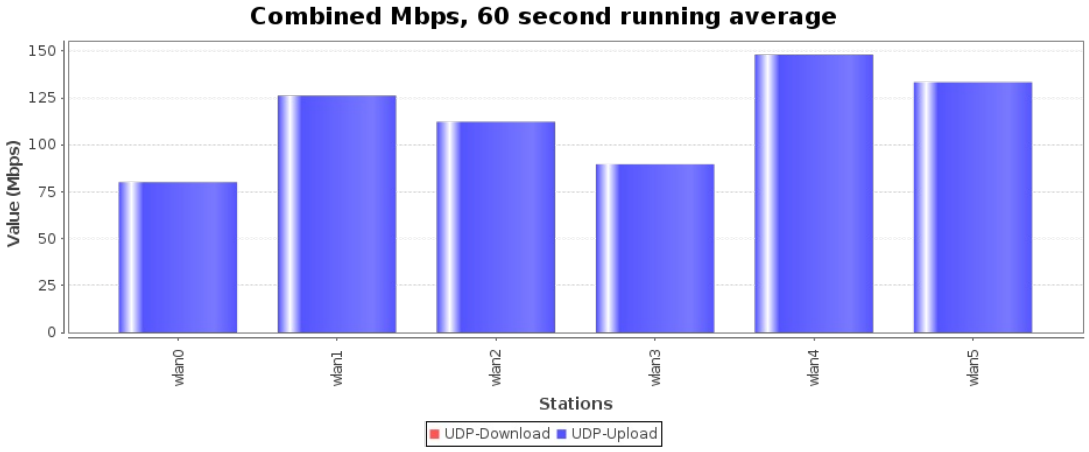
CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	166666666 (166.667 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				6
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	320.13 MB	Cx Ave:	415.88 MB	Cx Max:	542.943 MB	All Cx:	2.437 GB
Total:								2.437 GB

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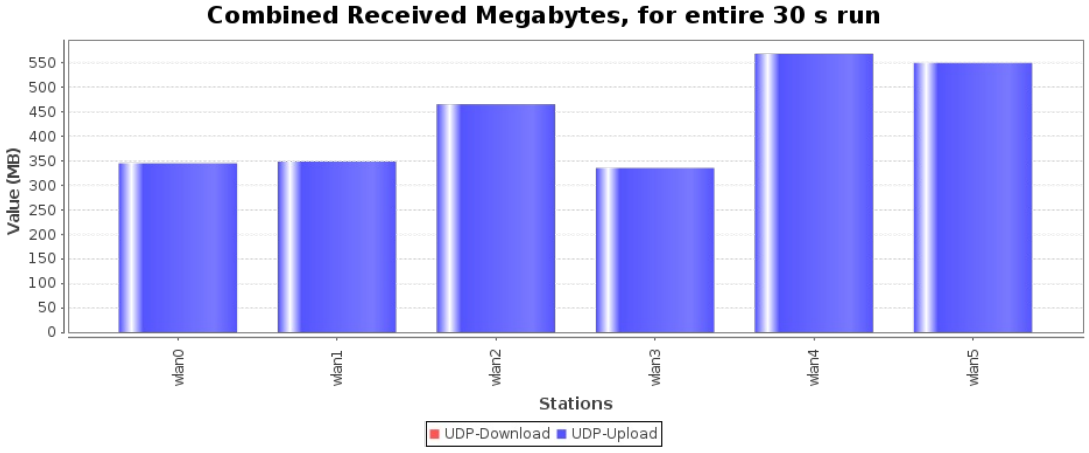
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	142857142 (142.857 Mbps)	All:	1000000000 (1 Gbps)

Total:	1000000000 (1 Gbps)
Station count:	7
Connections per station:	1
Payload (PDU) sizes:	AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	32.154 Mbps	Cx Ave:	93.233 Mbps	Cx Max:	130.526 Mbps	All Cx:	652.631 Mbps
Total:								652.631 Mbps
Aggregated Rate:	Min:	32.154 Mbps	Avg:	93.233 Mbps	Max:	130.526 Mbps		

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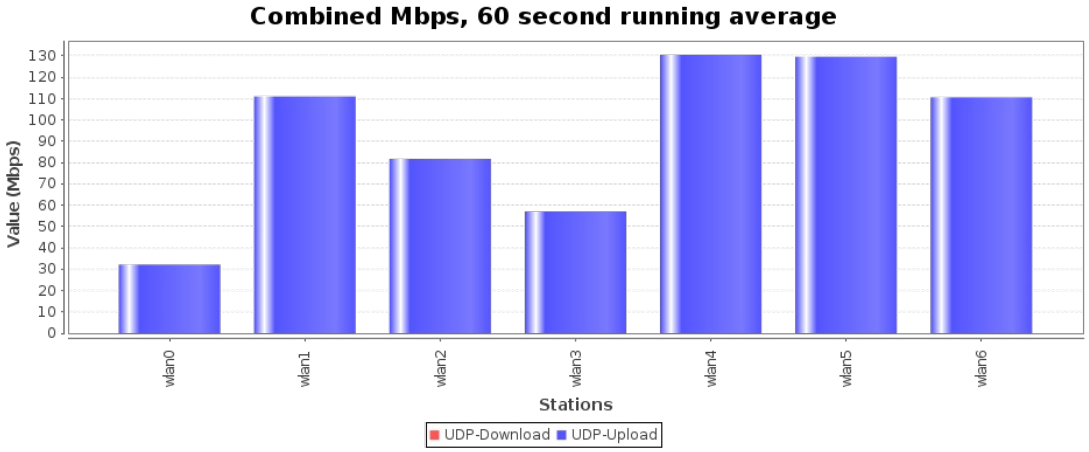
CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	142857142 (142.857 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				7
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	214.826 MB	Cx Ave:	342.958 MB	Cx Max:	440.525 MB	All Cx:	2.344 GB
Total:								2.344 GB

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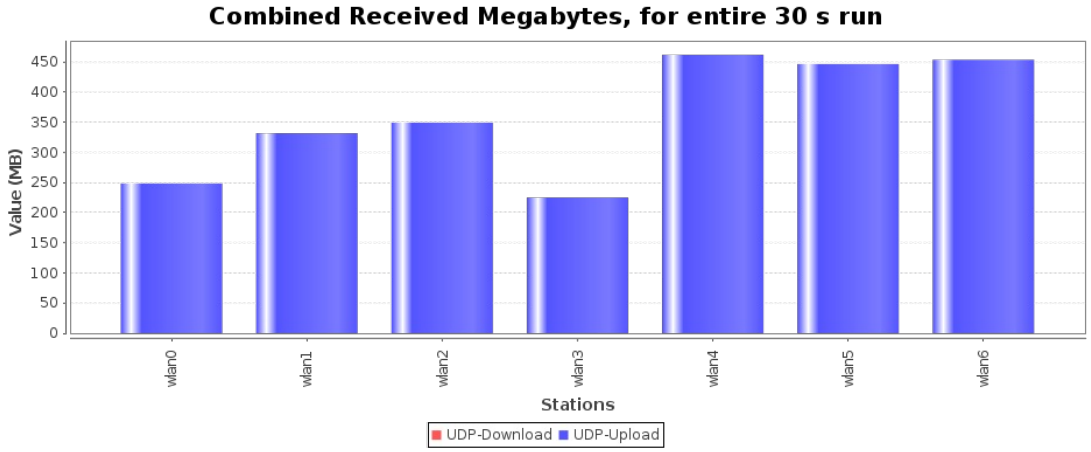
CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

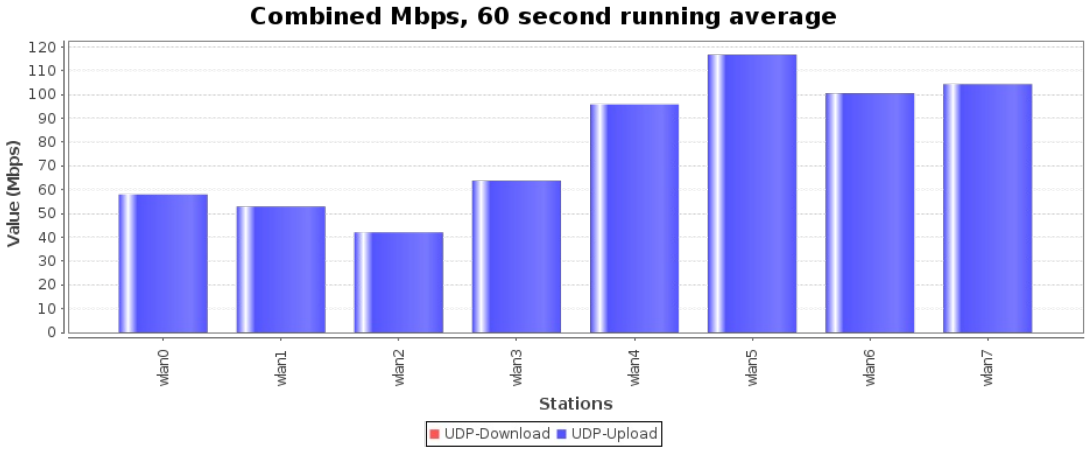
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	125000000 (125 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				8
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	42.103 Mbps	Cx Ave:	79.311 Mbps	Cx Max:	116.79 Mbps	All Cx:	634.489 Mbps
Total:								634.489 Mbps
Aggregated Rate:	Min:	42.103 Mbps	Avg:	79.311 Mbps	Max:	116.79 Mbps		

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

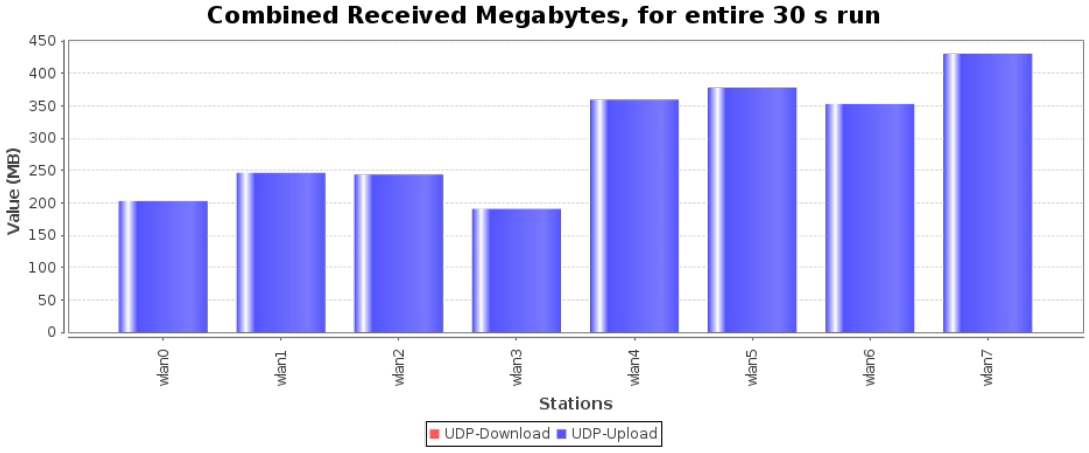
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	125000000 (125 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				8
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	181.761 MB	Cx Ave:	286.651 MB	Cx Max:	410.582 MB	All Cx:	2.239 GB
Total:								2.239 GB

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	111111111 (111.111 Mbps)	All:	1000000000 (1 Gbps)

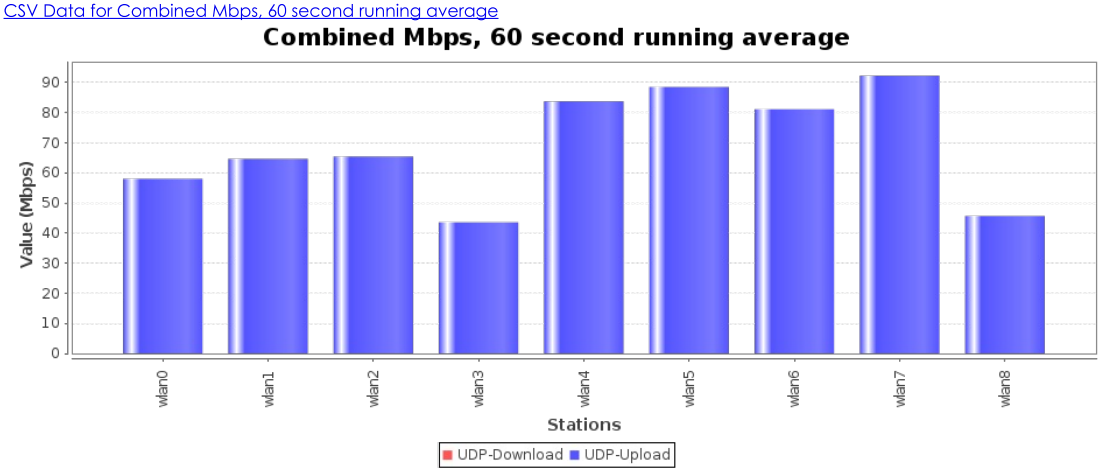
Total:	1000000000 (1 Gbps)
Station count:	9
Connections per station:	1
Payload (PDU) sizes:	AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	43.6 Mbps	Cx Ave:	69.233 Mbps	Cx Max:	92.295 Mbps	All Cx:	623.095 Mbps
Total:								623.095 Mbps
Aggregated Rate:	Min:	43.6 Mbps	Avg:	69.233 Mbps	Max:	92.295 Mbps		

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

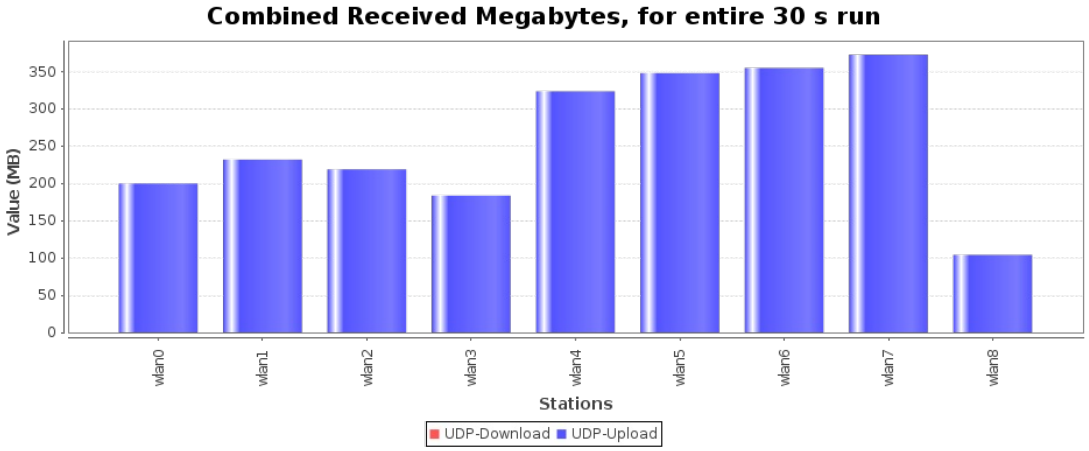
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	111111111 (111.111 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				9
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	99.437 MB	Cx Ave:	247.702 MB	Cx Max:	355.392 MB	All Cx:	2.177 GB
Total:								2.177 GB

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

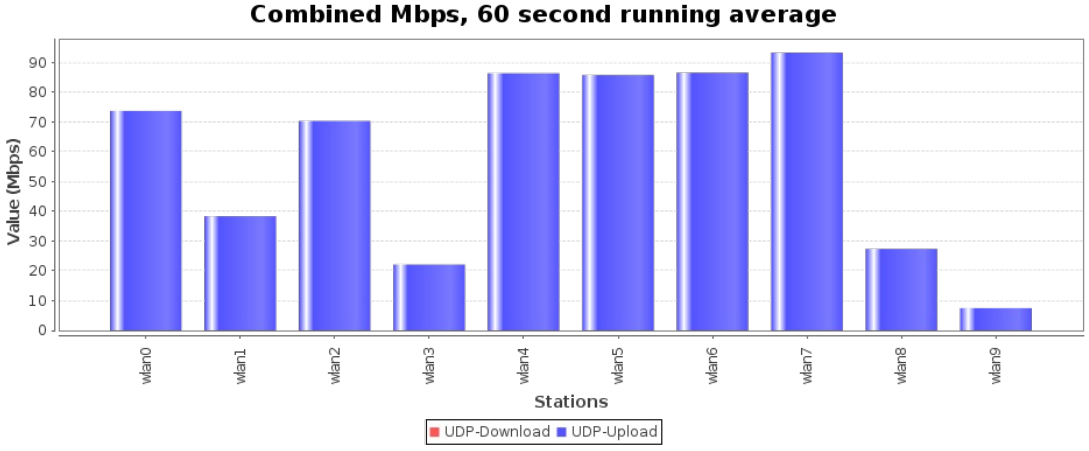
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	100000000 (100 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				10
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	7.512 Mbps	Cx Ave:	59.192 Mbps	Cx Max:	93.343 Mbps	All Cx:	591.918 Mbps
Total:								591.918 Mbps
Aggregated Rate:	Min:	7.512 Mbps	Avg:	59.192 Mbps	Max:	93.343 Mbps		

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

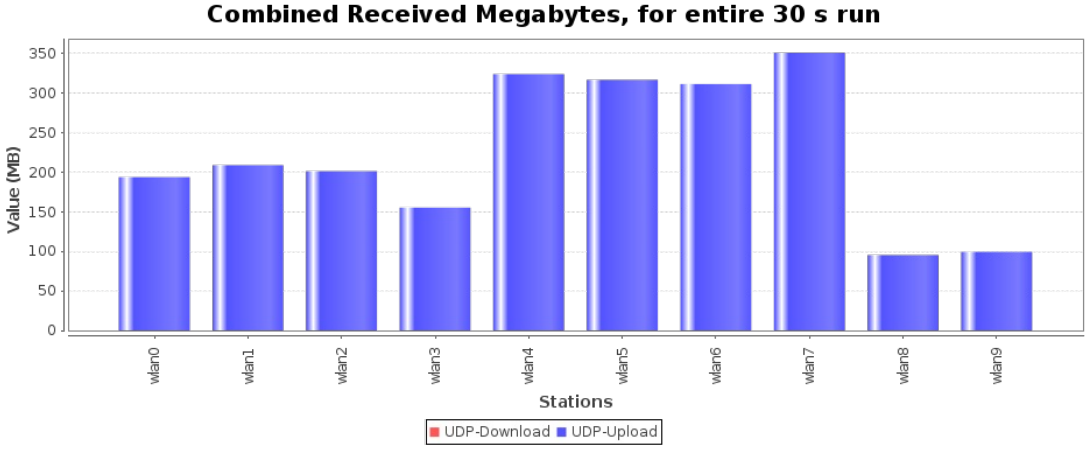
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	100000000 (100 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				10
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	91.043 MB	Cx Ave:	215.584 MB	Cx Max:	335.262 MB	All Cx:	2.105 GB
Total:								2.105 GB

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	90909090 (90.909 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				11
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

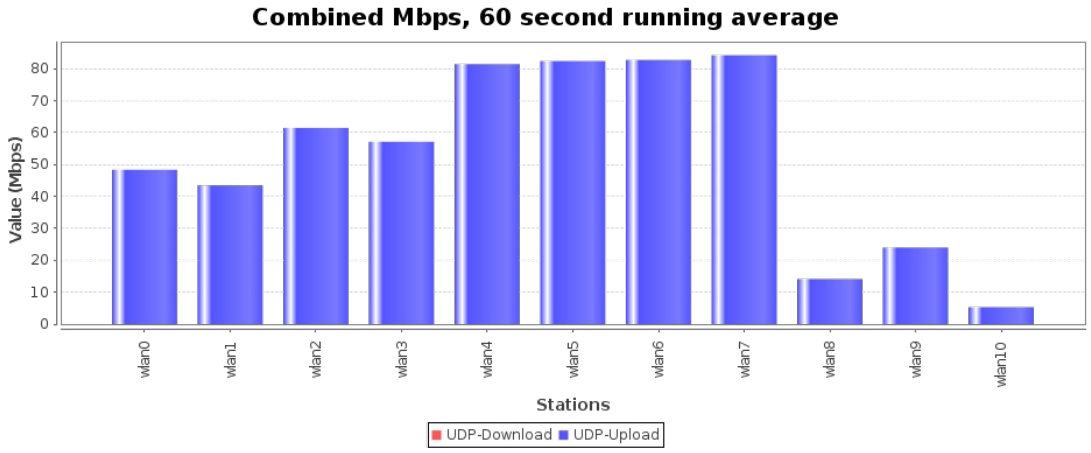
Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	5.331 Mbps	Cx Ave:	53.146 Mbps	Cx Max:	84.219 Mbps	All Cx:	584.609 Mbps
Total:								584.609 Mbps
Aggregated		5.331		53.146		84.219		

Rate:	Min:	Mbps	Avg:	Mbps	Max:	Mbps	

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	90909090 (90.909 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)

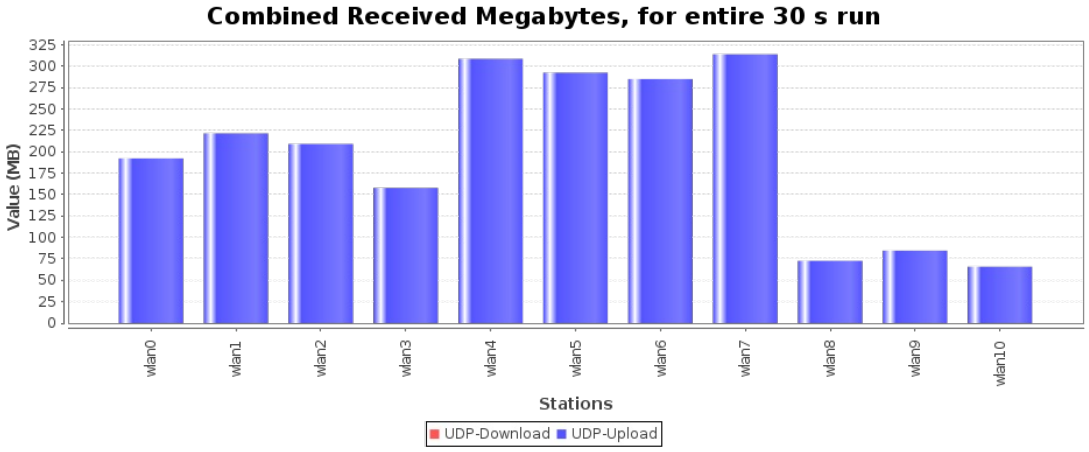
Station count:	11
Connections per station:	1
Payload (PDU) sizes:	AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	62.892 MB	Cx Ave:	191.189 MB	Cx Max:	299.511 MB	All Cx:	2.054 GB
Total:								2.054 GB

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Received Megabytes, for entire 30 s run



Requested Parameters:

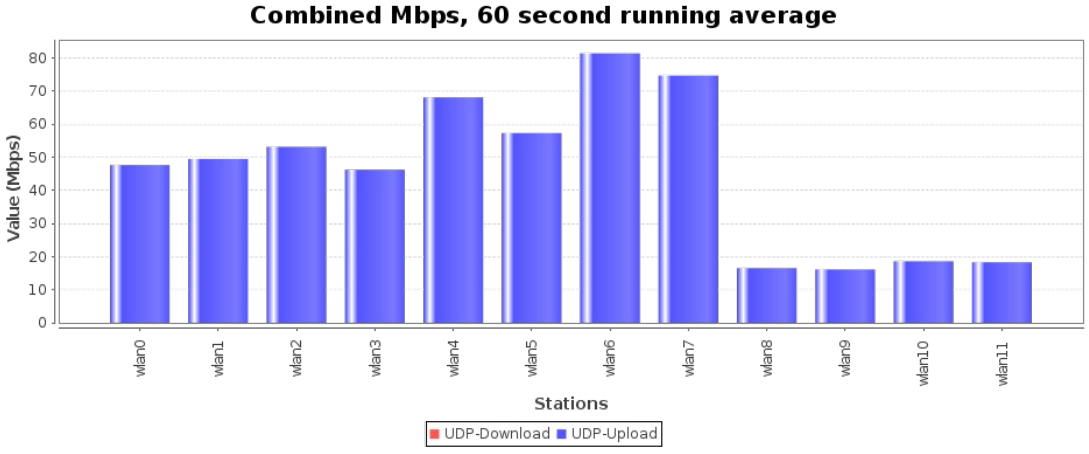
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	83333333 (83.333 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				12
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Rate:

Download Rate:	Cx Min:	0 bps	Cx Ave:	0 bps	Cx Max:	0 bps	All Cx:	0 bps
Upload Rate:	Cx Min:	16.154 Mbps	Cx Ave:	45.671 Mbps	Cx Max:	81.458 Mbps	All Cx:	548.047 Mbps
Total:								548.047 Mbps
Aggregated Rate:	Min:	16.154 Mbps	Avg:	45.671 Mbps	Max:	81.458 Mbps		

This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Mbps, 60 second running average



Requested Parameters:

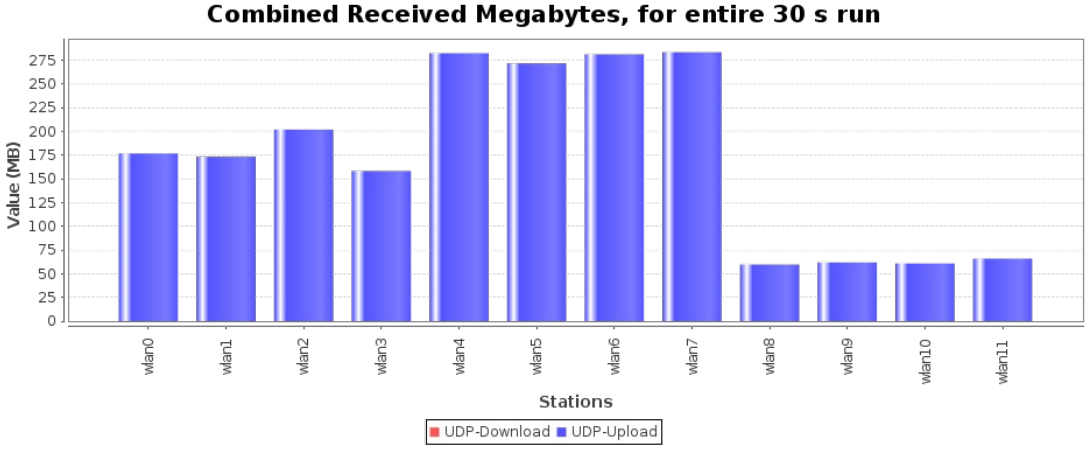
Download Rate:	Per station:	0 (0 bps)	All:	0 (0 bps)
Upload Rate:	Per station:	83333333 (83.333 Mbps)	All:	1000000000 (1 Gbps)
Total:				1000000000 (1 Gbps)
Station count:				12
Connections per station:				1
Payload (PDU) sizes:				AUTO (AUTO)

Observed Amount:

Download Amount:	Cx Min:	0 B	Cx Ave:	0 B	Cx Max:	0 B	All Cx:	0 B
Upload Amount:	Cx Min:	56.936 MB	Cx Ave:	165.172 MB	Cx Max:	270.475 MB	All Cx:	1.936 GB
Total:								1.936 GB

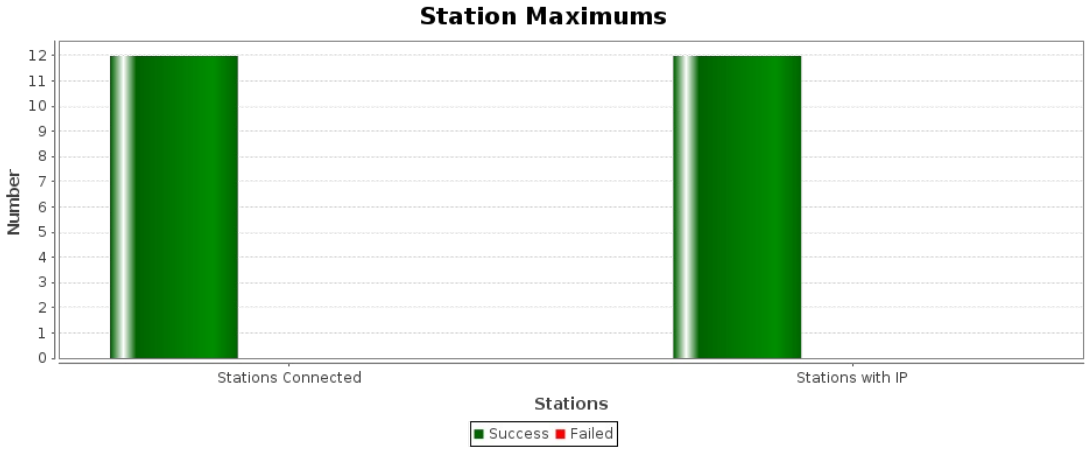
This graph shows fairness. On a fair system, each station should get about the same throughput.
In the download direction, it is mostly the device-under-test that is responsible for this behavior,
but in the upload direction, LANforge itself would be the source of most fairness issues
unless the device-under-test takes specific actions to ensure fairness.

CSV Data for Combined Received Megabytes, for entire 30 s run



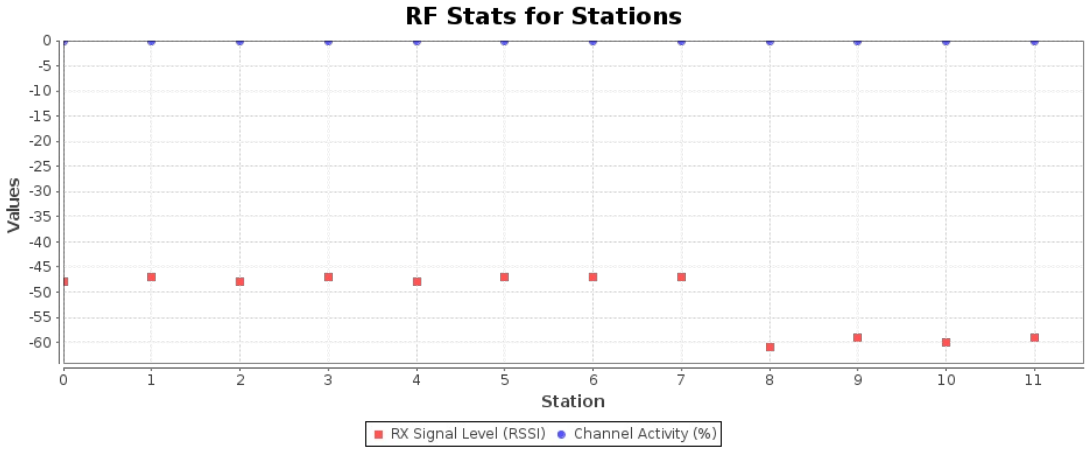

```
Maximum Stations Connected: 12
Stations NOT connected at this time: 0
Maximum Stations with IP Address: 12
Stations without IP at this time: 0
```

CSV Data for Station Maximums



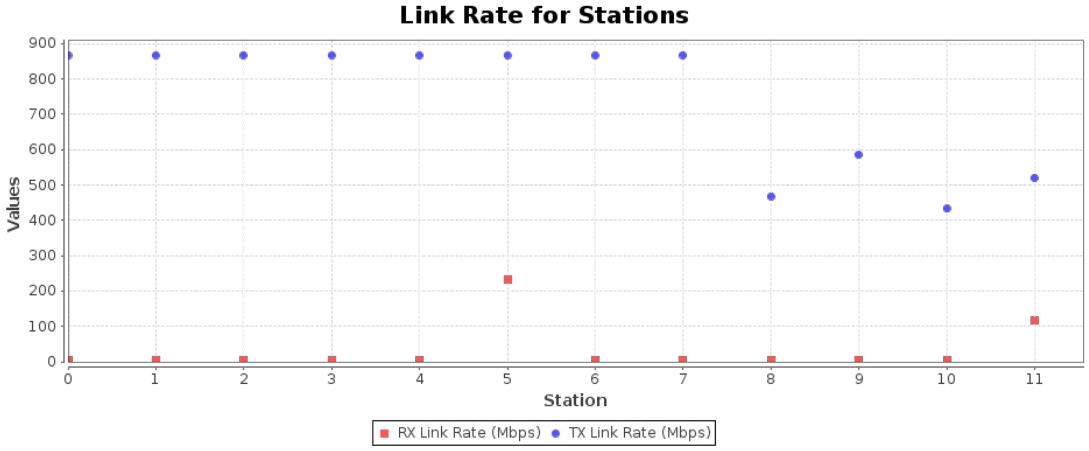
RF stats give an indication of how well how congested is the RF environment. Channel activity is what the wifi radio reports as the busy-time for the RF environment. It is expected that this be near 100% when LANforge is running at max speed, but at lower speeds, this should be a lower percentage unless the RF environment is busy with other systems.

CSV Data for RF Stats for Stations



Link rate stats give an indication of how well the rate-control is working. For rate-control, the 'RX' link rate corresponds to what the device-under-test is transmitting. If all of the stations are on the same radio, then the TX and RX encoding rates should be similar for all stations. If there is a definite pattern where some stations do not get good RX rate, then probably the device-under-test has rate-control problems. The TX rate is what LANforge is transmitting at.

CSV Data for Link Rate for Stations



Key Performance Indicators CSV

```
Scan Results for SSIDs used in this test.

BSS e8:2c:6d:85:69:2a(on wlan0) -- associated
        last seen: 103098.404s [boottime]
        TSF: 2421272482445 usec (28d, 00:34:32)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -48.00 dBm
        last seen: 33 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 0
                 * channel utilisation: 1/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 0
                 * OBSS non-GF present: 0
                 * dual beacon: 0
                 * dual CTS protection: 0
                 * STBC beacon: 0
                 * L-SIG TXOP Prot: 0
                 * PCO active: 0
                 * PCO phase: 0
        Extended capabilities:
                 * Extended Channel Switching
                 * BSS Transition
                 * SSID List
                 * QoS Map
                 * UTF-8 SSID
                 * Operating Mode Notification
                 * 6
                 * Max Number Of MSDUs In A-MSDU is unlimited
        VHT capabilities:
                VHT Capabilities (0x338979b1):
                        Max MPDU length: 7991
                        Supported Channel Width: neither 160 nor 80+80
                        RX LDPC
                        short GI (80 MHz)
                        TX STBC
                        SU Beamformer
                        SU Beamformee
                        MU Beamformer
                        RX antenna pattern consistency
                        TX antenna pattern consistency
                VHT RX MCS set:
                        1 streams: MCS 0-9
                        2 streams: MCS 0-9
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                VHT RX highest supported: 0 Mbps
                VHT TX MCS set:
                        1 streams: MCS 0-9
                        2 streams: MCS 0-9
                        3 streams: not supported
```

```
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                VHT TX highest supported: 0 Mbps
        VHT operation:
                 * channel width: 1 (80 MHz)
                 * center freq segment 1: 42
                 * center freq segment 2: 0
                 * VHT basic MCS set: 0xfffc
        Transmit Power Envelope:
                 * Local Maximum Transmit Power For 20 MHz: 23 dBm
                 * Local Maximum Transmit Power For 40 MHz: 23 dBm
                 * Local Maximum Transmit Power For 80 MHz: 23 dBm
        HE capabilities:
                HE MAC Capabilities (0x00051a081044):
                        +HTC HE Supported
                        TWT Responder
                        BSR
                        OM Control
                        Maximum A-MPDU Length Exponent: 3
                        BQR
                        A-MSDU in A-MPDU
                        OM Control UL MU Data Disable RX
                HE PHY Capabilities: (0x0420ce926e09af08000c00):
                        HE40/HE80/5GHz
                        LDPC Coding in Payload
                        NDP with 4x HE-LTF and 3.2us GI
                        STBC Tx <= 80MHz
                        STBC Rx <= 80MHz
                        Full Bandwidth UL MU-MIMO
                        Partial Bandwidth UL MU-MIMO
                        DCM Max Constellation: 2
                        DCM Max Constellation Rx: 2
                        SU Beamformer
                        MU Beamformer
                        Beamformee STS <= 80Mhz: 3
                        Beamformee STS > 80Mhz: 3
                        Sounding Dimensions <= 80Mhz: 1
                        Sounding Dimensions > 80Mhz: 1
                        Codebook Size SU Feedback
                        Codebook Size MU Feedback
                        Triggered SU Beamforming Feedback
                        Triggered MU Beamforming Feedback
                        Partial Bandwidth Extended Range
                        PPE Threshold Present
                        Max NC: 1
                        TX 1024-QAM
                        RX 1024-QAM
                HE RX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                HE TX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan1) -- associated
        last seen: 103098.813s [boottime]
        TSF: 2421318002479 usec (28d, 00:35:18)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -47.00 dBm
        last seen: 30 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
```

```
Country: US     Environment: Indoor/Outdoor
        Channels [36 - 64] @ 23 dBm
RSN:     * Version: 1
         * Group cipher: CCMP
         * Pairwise ciphers: CCMP
         * Authentication suites: PSK FT/PSK
         * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
BSS Load:
         * station count: 1
         * channel utilisation: 161/255
         * available admission capacity: 0 [*32us]
RM enabled capabilities:
        Capabilities: 0x72 0x00 0x00 0x00 0x00
                Neighbor Report
                Beacon Passive Measurement
                Beacon Active Measurement
                Beacon Table Measurement
        Nonoperating Channel Max Measurement Duration: 0
        Measurement Pilot Capability: 0
Supported operating classes:
         * current operating class: 128
HT capabilities:
        Capabilities: 0x9ef
                RX LDPC
                HT20/HT40
                SM Power Save disabled
                RX HT20 SGI
                RX HT40 SGI
                TX STBC
                RX STBC 1-stream
                Max AMSDU length: 7935 bytes
                No DSSS/CCK HT40
        Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
        Minimum RX AMPDU time spacing: No restriction (0x00)
        HT TX/RX MCS rate indexes supported: 0-15
HT operation:
         * primary channel: 36
         * secondary channel offset: above
         * STA channel width: any
         * RIFS: 0
         * HT protection: no
         * non-GF present: 1
         * OBSS non-GF present: 0
         * dual beacon: 0
         * dual CTS protection: 0
         * STBC beacon: 0
         * L-SIG TXOP Prot: 0
         * PCO active: 0
         * PCO phase: 0
Extended capabilities:
         * Extended Channel Switching
         * BSS Transition
         * SSID List
         * QoS Map
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
```

```
                        TWT Responder
                        BSR
                        OM Control
                        Maximum A-MPDU Length Exponent: 3
                        BQR
                        A-MSDU in A-MPDU
                        OM Control UL MU Data Disable RX
                HE PHY Capabilities: (0x0420ce926e09af08000c00):
                        HE40/HE80/5GHz
                        LDPC Coding in Payload
                        NDP with 4x HE-LTF and 3.2us GI
                        STBC Tx <= 80MHz
                        STBC Rx <= 80MHz
                        Full Bandwidth UL MU-MIMO
                        Partial Bandwidth UL MU-MIMO
                        DCM Max Constellation: 2
                        DCM Max Constellation Rx: 2
                        SU Beamformer
                        MU Beamformer
                        Beamformee STS <= 80Mhz: 3
                        Beamformee STS > 80Mhz: 3
                        Sounding Dimensions <= 80Mhz: 1
                        Sounding Dimensions > 80Mhz: 1
                        Codebook Size SU Feedback
                        Codebook Size MU Feedback
                        Triggered SU Beamforming Feedback
                        Triggered MU Beamforming Feedback
                        Partial Bandwidth Extended Range
                        PPE Threshold Present
                        Max NC: 1
                        TX 1024-QAM
                        RX 1024-QAM
                HE RX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                HE TX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan2) -- associated
        last seen: 103099.222s [boottime]
        TSF: 2421856145594 usec (28d, 00:44:16)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -48.00 dBm
        last seen: 30 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 12
                 * channel utilisation: 228/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
```

```
        Measurement Pilot Capability: 0
Supported operating classes:
         * current operating class: 128
HT capabilities:
        Capabilities: 0x9ef
                RX LDPC
                HT20/HT40
                SM Power Save disabled
                RX HT20 SGI
                RX HT40 SGI
                TX STBC
                RX STBC 1-stream
                Max AMSDU length: 7935 bytes
                No DSSS/CCK HT40
        Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
        Minimum RX AMPDU time spacing: No restriction (0x00)
        HT TX/RX MCS rate indexes supported: 0-15
HT operation:
         * primary channel: 36
         * secondary channel offset: above
         * STA channel width: any
         * RIFS: 0
         * HT protection: no
         * non-GF present: 1
         * OBSS non-GF present: 0
         * dual beacon: 0
         * dual CTS protection: 0
         * STBC beacon: 0
         * L-SIG TXOP Prot: 0
         * PCO active: 0
         * PCO phase: 0
Extended capabilities:
         * Extended Channel Switching
         * BSS Transition
         * SSID List
         * QoS Map
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
```

```
                        MU Beamformer
                        Beamformee STS <= 80Mhz: 3
                        Beamformee STS > 80Mhz: 3
                        Sounding Dimensions <= 80Mhz: 1
                        Sounding Dimensions > 80Mhz: 1
                        Codebook Size SU Feedback
                        Codebook Size MU Feedback
                        Triggered SU Beamforming Feedback
                        Triggered MU Beamforming Feedback
                        Partial Bandwidth Extended Range
                        PPE Threshold Present
                        Max NC: 1
                        TX 1024-QAM
                        RX 1024-QAM
                HE RX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                HE TX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan3) -- associated
        last seen: 103098.404s [boottime]
        TSF: 2421411336968 usec (28d, 00:36:51)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -47.00 dBm
        last seen: 31 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 3
                 * channel utilisation: 244/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
```

```
         * primary channel: 36
         * secondary channel offset: above
         * STA channel width: any
         * RIFS: 0
         * HT protection: no
         * non-GF present: 1
         * OBSS non-GF present: 0
         * dual beacon: 0
         * dual CTS protection: 0
         * STBC beacon: 0
         * L-SIG TXOP Prot: 0
         * PCO active: 0
         * PCO phase: 0
Extended capabilities:
         * Extended Channel Switching
         * BSS Transition
         * SSID List
         * QoS Map
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
```

```
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                HE TX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan4) -- associated
        last seen: 103101.475s [boottime]
        TSF: 2421457826432 usec (28d, 00:37:37)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -48.00 dBm
        last seen: 28 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 4
                 * channel utilisation: 158/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 1
                 * OBSS non-GF present: 0
                 * dual beacon: 0
                 * dual CTS protection: 0
                 * STBC beacon: 0
                 * L-SIG TXOP Prot: 0
                 * PCO active: 0
                 * PCO phase: 0
        Extended capabilities:
                 * Extended Channel Switching
                 * BSS Transition
                 * SSID List
                 * QoS Map
```

```
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        HE TX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
WMM:     * Parameter version 1
         * u-APSD
         * BE: CW 15-1023, AIFSN 3
```

```
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
         WPS:    * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan5) -- associated
        last seen: 103098.607s [boottime]
        TSF: 2421856142934 usec (28d, 00:44:16)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -48.00 dBm
        last seen: 31 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 12
                 * channel utilisation: 228/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 1
                 * OBSS non-GF present: 0
                 * dual beacon: 0
                 * dual CTS protection: 0
                 * STBC beacon: 0
                 * L-SIG TXOP Prot: 0
                 * PCO active: 0
                 * PCO phase: 0
        Extended capabilities:
                 * Extended Channel Switching
                 * BSS Transition
                 * SSID List
                 * QoS Map
                 * UTF-8 SSID
                 * Operating Mode Notification
                 * 6
                 * Max Number Of MSDUs In A-MSDU is unlimited
        VHT capabilities:
                VHT Capabilities (0x338979b1):
                        Max MPDU length: 7991
                        Supported Channel Width: neither 160 nor 80+80
                        RX LDPC
                        short GI (80 MHz)
                        TX STBC
                        SU Beamformer
                        SU Beamformee
                        MU Beamformer
                        RX antenna pattern consistency
                        TX antenna pattern consistency
                VHT RX MCS set:
                        1 streams: MCS 0-9
```

```
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        HE TX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
WMM:     * Parameter version 1
         * u-APSD
         * BE: CW 15-1023, AIFSN 3
         * BK: CW 15-1023, AIFSN 7
         * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
         * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
WPS:     * Version: 1.0
         * Wi-Fi Protected Setup State: 2 (Configured)
         * Response Type: 3 (AP)
         * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
         * Manufacturer: Adtran
         * Model: 841-t6
         * Model Number:
         * Serial Number: RGE82C6D856920
         * Primary Device Type: 6-0050f204-1
         * Device name: HUB
         * Config methods:
         * RF Bands: 0x2
         * Version2: 2.0
```

```
BSS e8:2c:6d:85:69:2a(on wlan6) -- associated
        last seen: 103098.404s [boottime]
        TSF: 2421557768816 usec (28d, 00:39:17)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -48.00 dBm
        last seen: 30 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 6
                 * channel utilisation: 182/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 1
                 * OBSS non-GF present: 0
                 * dual beacon: 0
                 * dual CTS protection: 0
                 * STBC beacon: 0
                 * L-SIG TXOP Prot: 0
                 * PCO active: 0
                 * PCO phase: 0
        Extended capabilities:
                 * Extended Channel Switching
                 * BSS Transition
                 * SSID List
                 * QoS Map
                 * UTF-8 SSID
                 * Operating Mode Notification
                 * 6
                 * Max Number Of MSDUs In A-MSDU is unlimited
        VHT capabilities:
                VHT Capabilities (0x338979b1):
                        Max MPDU length: 7991
                        Supported Channel Width: neither 160 nor 80+80
                        RX LDPC
                        short GI (80 MHz)
                        TX STBC
                        SU Beamformer
                        SU Beamformee
                        MU Beamformer
                        RX antenna pattern consistency
                        TX antenna pattern consistency
                VHT RX MCS set:
                        1 streams: MCS 0-9
                        2 streams: MCS 0-9
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                VHT RX highest supported: 0 Mbps
                VHT TX MCS set:
                        1 streams: MCS 0-9
                        2 streams: MCS 0-9
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                VHT TX highest supported: 0 Mbps
```

```
        VHT operation:
                 * channel width: 1 (80 MHz)
                 * center freq segment 1: 42
                 * center freq segment 2: 0
                 * VHT basic MCS set: 0xfffc
        Transmit Power Envelope:
                 * Local Maximum Transmit Power For 20 MHz: 23 dBm
                 * Local Maximum Transmit Power For 40 MHz: 23 dBm
                 * Local Maximum Transmit Power For 80 MHz: 23 dBm
        HE capabilities:
                HE MAC Capabilities (0x00051a081044):
                        +HTC HE Supported
                        TWT Responder
                        BSR
                        OM Control
                        Maximum A-MPDU Length Exponent: 3
                        BQR
                        A-MSDU in A-MPDU
                        OM Control UL MU Data Disable RX
                HE PHY Capabilities: (0x0420ce926e09af08000c00):
                        HE40/HE80/5GHz
                        LDPC Coding in Payload
                        NDP with 4x HE-LTF and 3.2us GI
                        STBC Tx <= 80MHz
                        STBC Rx <= 80MHz
                        Full Bandwidth UL MU-MIMO
                        Partial Bandwidth UL MU-MIMO
                        DCM Max Constellation: 2
                        DCM Max Constellation Rx: 2
                        SU Beamformer
                        MU Beamformer
                        Beamformee STS <= 80Mhz: 3
                        Beamformee STS > 80Mhz: 3
                        Sounding Dimensions <= 80Mhz: 1
                        Sounding Dimensions > 80Mhz: 1
                        Codebook Size SU Feedback
                        Codebook Size MU Feedback
                        Triggered SU Beamforming Feedback
                        Triggered MU Beamforming Feedback
                        Partial Bandwidth Extended Range
                        PPE Threshold Present
                        Max NC: 1
                        TX 1024-QAM
                        RX 1024-QAM
                HE RX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                HE TX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan7) -- associated
        last seen: 103102.499s [boottime]
        TSF: 2421604266832 usec (28d, 00:40:04)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -48.00 dBm
        last seen: 31 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
```

```
         * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
BSS Load:
         * station count: 7
         * channel utilisation: 230/255
         * available admission capacity: 0 [*32us]
RM enabled capabilities:
        Capabilities: 0x72 0x00 0x00 0x00 0x00
                Neighbor Report
                Beacon Passive Measurement
                Beacon Active Measurement
                Beacon Table Measurement
        Nonoperating Channel Max Measurement Duration: 0
        Measurement Pilot Capability: 0
Supported operating classes:
         * current operating class: 128
HT capabilities:
        Capabilities: 0x9ef
                RX LDPC
                HT20/HT40
                SM Power Save disabled
                RX HT20 SGI
                RX HT40 SGI
                TX STBC
                RX STBC 1-stream
                Max AMSDU length: 7935 bytes
                No DSSS/CCK HT40
        Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
        Minimum RX AMPDU time spacing: No restriction (0x00)
        HT TX/RX MCS rate indexes supported: 0-15
HT operation:
         * primary channel: 36
         * secondary channel offset: above
         * STA channel width: any
         * RIFS: 0
         * HT protection: no
         * non-GF present: 1
         * OBSS non-GF present: 0
         * dual beacon: 0
         * dual CTS protection: 0
         * STBC beacon: 0
         * L-SIG TXOP Prot: 0
         * PCO active: 0
         * PCO phase: 0
Extended capabilities:
         * Extended Channel Switching
         * BSS Transition
         * SSID List
         * QoS Map
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
```

```
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        HE TX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
WMM:     * Parameter version 1
         * u-APSD
         * BE: CW 15-1023, AIFSN 3
         * BK: CW 15-1023, AIFSN 7
         * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
         * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
WPS:     * Version: 1.0
         * Wi-Fi Protected Setup State: 2 (Configured)
         * Response Type: 3 (AP)
         * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
         * Manufacturer: Adtran
         * Model: 841-t6
         * Model Number:
         * Serial Number: RGE82C6D856920
         * Primary Device Type: 6-0050f204-1
         * Device name: HUB
         * Config methods:
         * RF Bands: 0x2
         * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan8) -- associated
        last seen: 103098.404s [boottime]
        TSF: 2421655560952 usec (28d, 00:40:55)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -62.00 dBm
        last seen: 32 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 8
                 * channel utilisation: 121/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
```

```
                HT20/HT40
                SM Power Save disabled
                RX HT20 SGI
                RX HT40 SGI
                TX STBC
                RX STBC 1-stream
                Max AMSDU length: 7935 bytes
                No DSSS/CCK HT40
        Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
        Minimum RX AMPDU time spacing: No restriction (0x00)
        HT TX/RX MCS rate indexes supported: 0-15
HT operation:
         * primary channel: 36
         * secondary channel offset: above
         * STA channel width: any
         * RIFS: 0
         * HT protection: no
         * non-GF present: 1
         * OBSS non-GF present: 0
         * dual beacon: 0
         * dual CTS protection: 0
         * STBC beacon: 0
         * L-SIG TXOP Prot: 0
         * PCO active: 0
         * PCO phase: 0
Extended capabilities:
         * Extended Channel Switching
         * BSS Transition
         * SSID List
         * QoS Map
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
```

```
                        Codebook Size MU Feedback
                        Triggered SU Beamforming Feedback
                        Triggered MU Beamforming Feedback
                        Partial Bandwidth Extended Range
                        PPE Threshold Present
                        Max NC: 1
                        TX 1024-QAM
                        RX 1024-QAM
                HE RX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                HE TX MCS and NSS set <= 80 MHz
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan9) -- associated
        last seen: 103098.404s [boottime]
        TSF: 2421707784920 usec (28d, 00:41:47)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -61.00 dBm
        last seen: 34 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 9
                 * channel utilisation: 22/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 1
```

```
         * OBSS non-GF present: 0
         * dual beacon: 0
         * dual CTS protection: 0
         * STBC beacon: 0
         * L-SIG TXOP Prot: 0
         * PCO active: 0
         * PCO phase: 0
Extended capabilities:
         * Extended Channel Switching
         * BSS Transition
         * SSID List
         * QoS Map
         * UTF-8 SSID
         * Operating Mode Notification
         * 6
         * Max Number Of MSDUs In A-MSDU is unlimited
VHT capabilities:
        VHT Capabilities (0x338979b1):
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        HE TX MCS and NSS set <= 80 MHz
```

```
                        1 streams: MCS 0-11
                        2 streams: MCS 0-11
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
                        8 streams: not supported
                PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
        WMM:     * Parameter version 1
                 * u-APSD
                 * BE: CW 15-1023, AIFSN 3
                 * BK: CW 15-1023, AIFSN 7
                 * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
                 * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
        WPS:     * Version: 1.0
                 * Wi-Fi Protected Setup State: 2 (Configured)
                 * Response Type: 3 (AP)
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan10) -- associated
        last seen: 103099.222s [boottime]
        TSF: 2421759394518 usec (28d, 00:42:39)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -61.00 dBm
        last seen: 31 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 10
                 * channel utilisation: 108/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
                 * current operating class: 128
        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
                        HT20/HT40
                        SM Power Save disabled
                        RX HT20 SGI
                        RX HT40 SGI
                        TX STBC
                        RX STBC 1-stream
                        Max AMSDU length: 7935 bytes
                        No DSSS/CCK HT40
                Maximum RX AMPDU length 65535 bytes (exponent: 0x003)
                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 1
                 * OBSS non-GF present: 0
                 * dual beacon: 0
                 * dual CTS protection: 0
                 * STBC beacon: 0
                 * L-SIG TXOP Prot: 0
                 * PCO active: 0
                 * PCO phase: 0
        Extended capabilities:
                 * Extended Channel Switching
                 * BSS Transition
                 * SSID List
                 * QoS Map
                 * UTF-8 SSID
                 * Operating Mode Notification
                 * 6
                 * Max Number Of MSDUs In A-MSDU is unlimited
        VHT capabilities:
                VHT Capabilities (0x338979b1):
```

```
                Max MPDU length: 7991
                Supported Channel Width: neither 160 nor 80+80
                RX LDPC
                short GI (80 MHz)
                TX STBC
                SU Beamformer
                SU Beamformee
                MU Beamformer
                RX antenna pattern consistency
                TX antenna pattern consistency
        VHT RX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
         * VHT basic MCS set: 0xfffc
Transmit Power Envelope:
         * Local Maximum Transmit Power For 20 MHz: 23 dBm
         * Local Maximum Transmit Power For 40 MHz: 23 dBm
         * Local Maximum Transmit Power For 80 MHz: 23 dBm
HE capabilities:
        HE MAC Capabilities (0x00051a081044):
                +HTC HE Supported
                TWT Responder
                BSR
                OM Control
                Maximum A-MPDU Length Exponent: 3
                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
                HE40/HE80/5GHz
                LDPC Coding in Payload
                NDP with 4x HE-LTF and 3.2us GI
                STBC Tx <= 80MHz
                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        HE TX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
WMM:     * Parameter version 1
         * u-APSD
         * BE: CW 15-1023, AIFSN 3
         * BK: CW 15-1023, AIFSN 7
         * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
         * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
WPS:     * Version: 1.0
         * Wi-Fi Protected Setup State: 2 (Configured)
         * Response Type: 3 (AP)
```

```
                 * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
                 * Manufacturer: Adtran
                 * Model: 841-t6
                 * Model Number:
                 * Serial Number: RGE82C6D856920
                 * Primary Device Type: 6-0050f204-1
                 * Device name: HUB
                 * Config methods:
                 * RF Bands: 0x2
                 * Version2: 2.0


BSS e8:2c:6d:85:69:2a(on wlan11) -- associated
        last seen: 103100.043s [boottime]
        TSF: 2421810901879 usec (28d, 00:43:30)
        freq: 5180
        beacon interval: 100 TUs
        capability: ESS Privacy RadioMeasure (0x1011)
        signal: -61.00 dBm
        last seen: 29 ms ago
        Information elements from Probe Response frame:
        SSID: 841-t6-5G
        Supported rates: 6.0* 9.0 12.0* 18.0 24.0* 36.0 48.0 54.0
        DS Parameter set: channel 36
        Country: US     Environment: Indoor/Outdoor
                Channels [36 - 64] @ 23 dBm
        RSN:     * Version: 1
                 * Group cipher: CCMP
                 * Pairwise ciphers: CCMP
                 * Authentication suites: PSK FT/PSK
                 * Capabilities: 16-PTKSA-RC 1-GTKSA-RC (0x000c)
        BSS Load:
                 * station count: 11
                 * channel utilisation: 1/255
                 * available admission capacity: 0 [*32us]
        RM enabled capabilities:
                Capabilities: 0x72 0x00 0x00 0x00 0x00
                        Neighbor Report
                        Beacon Passive Measurement
                        Beacon Active Measurement
                        Beacon Table Measurement
                Nonoperating Channel Max Measurement Duration: 0
                Measurement Pilot Capability: 0
        Supported operating classes:
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        HT capabilities:
                Capabilities: 0x9ef
                        RX LDPC
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                        TX STBC
                        RX STBC 1-stream
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                Minimum RX AMPDU time spacing: No restriction (0x00)
                HT TX/RX MCS rate indexes supported: 0-15
        HT operation:
                 * primary channel: 36
                 * secondary channel offset: above
                 * STA channel width: any
                 * RIFS: 0
                 * HT protection: no
                 * non-GF present: 1
                 * OBSS non-GF present: 0
                 * dual beacon: 0
                 * dual CTS protection: 0
                 * STBC beacon: 0
                 * L-SIG TXOP Prot: 0
                 * PCO active: 0
                 * PCO phase: 0
        Extended capabilities:
                 * Extended Channel Switching
                 * BSS Transition
                 * SSID List
                 * QoS Map
                 * UTF-8 SSID
                 * Operating Mode Notification
                 * 6
                 * Max Number Of MSDUs In A-MSDU is unlimited
        VHT capabilities:
                VHT Capabilities (0x338979b1):
                        Max MPDU length: 7991
                        Supported Channel Width: neither 160 nor 80+80
                        RX LDPC
                        short GI (80 MHz)
                        TX STBC
                        SU Beamformer
                        SU Beamformee
                        MU Beamformer
                        RX antenna pattern consistency
                        TX antenna pattern consistency
                VHT RX MCS set:
                        1 streams: MCS 0-9
                        2 streams: MCS 0-9
                        3 streams: not supported
                        4 streams: not supported
                        5 streams: not supported
                        6 streams: not supported
                        7 streams: not supported
```

```
                8 streams: not supported
        VHT RX highest supported: 0 Mbps
        VHT TX MCS set:
                1 streams: MCS 0-9
                2 streams: MCS 0-9
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        VHT TX highest supported: 0 Mbps
VHT operation:
         * channel width: 1 (80 MHz)
         * center freq segment 1: 42
         * center freq segment 2: 0
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                OM Control
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                BQR
                A-MSDU in A-MPDU
                OM Control UL MU Data Disable RX
        HE PHY Capabilities: (0x0420ce926e09af08000c00):
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                STBC Rx <= 80MHz
                Full Bandwidth UL MU-MIMO
                Partial Bandwidth UL MU-MIMO
                DCM Max Constellation: 2
                DCM Max Constellation Rx: 2
                SU Beamformer
                MU Beamformer
                Beamformee STS <= 80Mhz: 3
                Beamformee STS > 80Mhz: 3
                Sounding Dimensions <= 80Mhz: 1
                Sounding Dimensions > 80Mhz: 1
                Codebook Size SU Feedback
                Codebook Size MU Feedback
                Triggered SU Beamforming Feedback
                Triggered MU Beamforming Feedback
                Partial Bandwidth Extended Range
                PPE Threshold Present
                Max NC: 1
                TX 1024-QAM
                RX 1024-QAM
        HE RX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        HE TX MCS and NSS set <= 80 MHz
                1 streams: MCS 0-11
                2 streams: MCS 0-11
                3 streams: not supported
                4 streams: not supported
                5 streams: not supported
                6 streams: not supported
                7 streams: not supported
                8 streams: not supported
        PPE Threshold 0x39 0x1c 0xc7 0x71 0x1c 0x07
WMM:     * Parameter version 1
         * u-APSD
         * BE: CW 15-1023, AIFSN 3
         * BK: CW 15-1023, AIFSN 7
         * VI: CW 7-15, AIFSN 2, TXOP 3008 usec
         * VO: CW 3-7, AIFSN 2, TXOP 1504 usec
WPS:     * Version: 1.0
         * Wi-Fi Protected Setup State: 2 (Configured)
         * Response Type: 3 (AP)
         * UUID: 024d0878-3dfb-5417-80b6-83eab37ea528
         * Manufacturer: Adtran
         * Model: 841-t6
         * Model Number:
         * Serial Number: RGE82C6D856920
         * Primary Device Type: 6-0050f204-1
         * Device name: HUB
         * Config methods:
         * RF Bands: 0x2
         * Version2: 2.0
```


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