NS3 Simulation Result

1) Yang et al. [21]

Transmit the message as follows:

User device: 1120 *bits*

Edge Gateway: 2560 *bits*

IoT Deviice: 1120 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	19.90231	5070.265
$1\times U_i + 20\times SDj$	20.25478	3606.458
$1\times U_i + 30\times SDj$	26.78811	2450.882
$1\times U_i + 40\times SDj$	26.79205	2234.754
$1\times U_i + 50\times SDj$	33.60103	1770.865

2) Cui et al. [35]

Transmit the message as follows:

User device: 768 *bits*

Edge Gateway: 928 *bits*

IoT Deviice: 1536 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	16.94086	5732.255
$1\times U_i + 20\times SDj$	31.00438	3099.67
$1\times U_i + 30\times SDj$	44.45548	2103.493
$1\times U_i + 40\times SDj$	55.35946	1629.565
$1\times U_i + 50\times SDj$	65.24342	1301.393

3) Vinoth et al. [36]

Transmit the message as follows:

User device: 512 *bits*

Edge Gateway: 2144 *bits*

IoT Deviice: 672 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	9.9673	12689.039
$1\times U_i + 20\times SDj$	19.27879	6423.638
$1\times U_i + 30\times SDj$	25.86358	4531.874
$1\times U_i + 40\times SDj$	40.66258	3144.304
$1\times U_i + 50\times SDj$	52.48116	3878.582

4) Ming et al. [37]

Transmit the message as follows:

User device: 672 *bits*

Edge Gateway: 1536 *bits*

IoT Deviice: 512 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	11.16703	7937.293
$1\times U_i + 20\times SDj$	21.97969	4014.452
$1\times U_i + 30\times SDj$	31.60893	2671.937
$1\times U_i + 40\times SDj$	23.19476	2650.046
$1\times U_i + 50\times SDj$	29.19024	2096.679

5) Guo et al. [45]

Transmit the message as follows:

User device: 832 *bits*

Edge Gateway: 992 *bits*

IoT Deviice: 672 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	8.45391	14035.321
$1\times U_i + 20\times SDj$	10.49381	8158.332
$1\times U_i + 30\times SDj$	17.86725	5785.333
$1\times U_i + 40\times SDj$	17.56985	5078.13
$1\times U_i + 50\times SDj$	25.54303	4091.13

6) Xu et al. [46]

Transmit the message as follows:

User device: 864 *bits*

Edge Gateway: 1216 *bits*

IoT Deviice: 1024 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	5.96344	20579.4
$1\times U_i + 20\times SDj$	10.86358	10366.993
$1\times U_i + 30\times SDj$	14.32856	7566.708
$1\times U_i + 40\times SDj$	19.88971	5526.393
$1\times U_i + 50\times SDj$	30.36731	4107.89

7) Li et al. [47]

Transmit the message as follows:

User device: 864 *bits*

Edge Gateway: 1312 *bits*

IoT Deviice: 512 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	9.39734	10911.919
$1\times U_i + 20\times SDj$	16.01059	5859.809
$1\times U_i + 30\times SDj$	27.98502	3734.82
$1\times U_i + 40\times SDj$	39.5711	2730.446
$1\times U_i + 50\times SDj$	50.36503	3034.934

8) Ours

Transmit the message as follows:

User device: 672 *bits*

Edge Gateway: 1248 *bits*

IoT Deviice: 512 *bits*

The simulation results are as follows:

Scenarios	*End-to-end delay (ms)*	*Network Throughput (bps)*
$1\times U_i + 10\times SDj$	10.03726	8941.282
$1\times U_i + 20\times SDj$	17.03028	4868.682
$1\times U_i + 30\times SDj$	15.62358	3970.345
$1\times U_i + 40\times SDj$	24.3663	2449.994
$1\times U_i + 50\times SDj$	22.4977	2237.881