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5G CPE

Next-Gen connectivity for the industry and transportation

Wavecom

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Evolution

2013



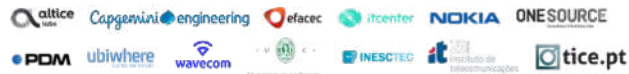
2016



2021



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Motivation and Objectives

IP router with multiple wireless interfaces on different frequency bands for M2M, IoT and Critical Applications

Motivation

Demand for modular and flexible radio solutions, with a high integration level and new technologies support

Differentiating factors

- **Flexibility** – Integrates different wired and wireless communication technologies in the same box
- **Resilience** – Provides redundant communications through different wired and wireless interfaces
- **Centralized Management** – Monitor, manage and operate thousands of units from a public cloud or from your private cloud

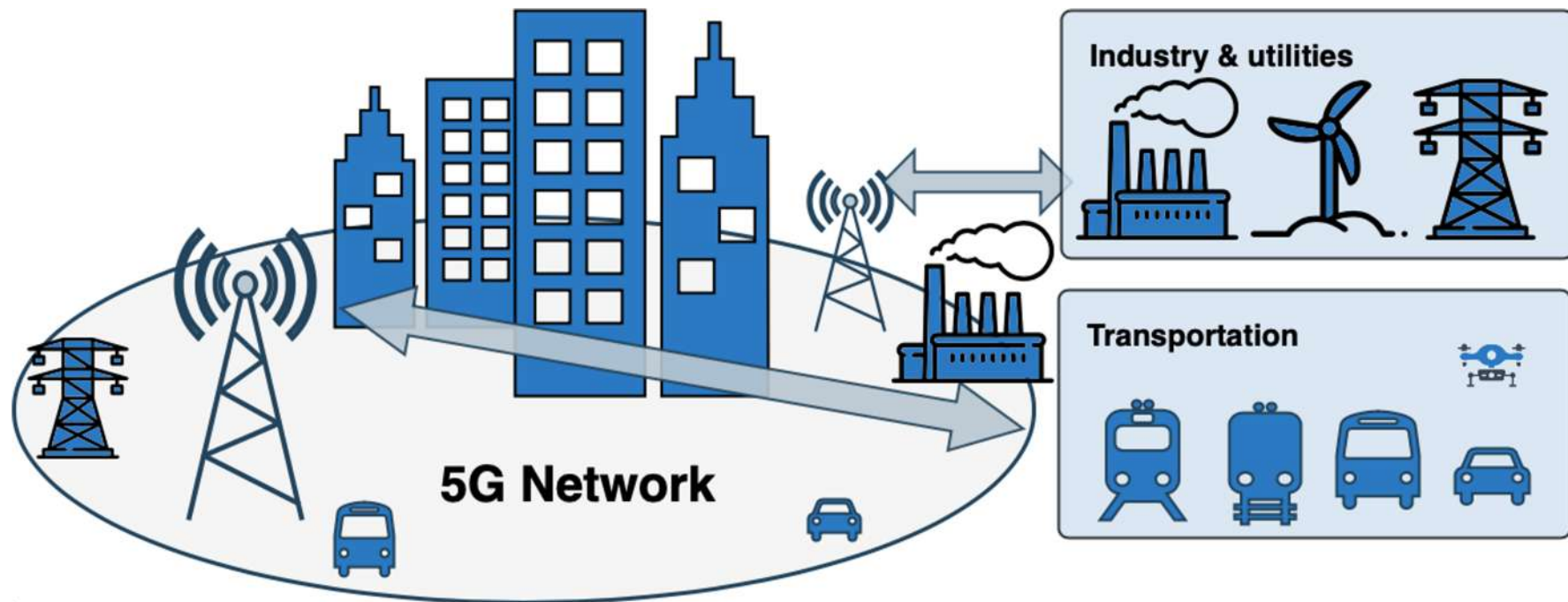


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Smart Cities/IoT

IoT Gateway: LoRa, LoRaWAN, Zigbee, BLE, ...

Wi-Fi Hotspots

CCTV networks communications

Building-to-building or pole-to-pole connectivity

Metering



Transportation

High-speed Wi-Fi connectivity for passengers (802.11ac & 802.11ax)

Multi-redundancy 3G/4G/5G connectivity

Centralized management and monitoring

Support for applications requiring connectivity and edge functions



Utilities

Cellular Router for Utilities' sites

Broadband Private Networks with wireless communications

Critical communications: SCADA, Security, CCTV, Voice

Redundancy Links

Industry 4.0 compliant



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Average - 826 Mbits/sec

Peak - 1 Gbits/sec

```
root@cpe4:/# iperf3 -c 192.168.16.33 -R
Connecting to host 192.168.16.33, port 5201
Reverse mode, remote host 192.168.16.33 is sending
[ 5] local 10.16.9.143 port 56052 connected to 192.168.16.33 port 5201
[ ID] Interval          Transfer          Bitrate
[ 5]  0.00-1.00      sec    29.6 MBytes      248 Mbits/sec
[ 5]  1.00-2.00      sec   107 MBytes      898 Mbits/sec
[ 5]  2.00-3.00      sec   120 MBytes     1.01 Gbits/sec
[ 5]  3.00-4.00      sec   116 MBytes      970 Mbits/sec
[ 5]  4.00-5.00      sec   109 MBytes      917 Mbits/sec
[ 5]  5.00-6.00      sec   95.8 MBytes      804 Mbits/sec
[ 5]  6.00-7.00      sec   96.8 MBytes      812 Mbits/sec
[ 5]  7.00-8.00      sec   99.2 MBytes      832 Mbits/sec
[ 5]  8.00-9.00      sec   101 MBytes      850 Mbits/sec
[ 5]  9.00-10.00     sec   110 MBytes      921 Mbits/sec
-----
[ ID] Interval          Transfer          Bitrate          Retr
[ 5]  0.00-10.00     sec   988 MBytes      829 Mbits/sec     49
[ 5]  0.00-10.00     sec   984 MBytes      826 Mbits/sec
```

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Min - 8.1 ms

Avg - 15.9 ms

```
m5gws@cpe5:~$ ping 192.168.16.33 -c 10
PING 192.168.16.33 (192.168.16.33) 56(84) bytes of data.
64 bytes from 192.168.16.33: icmp_seq=1 ttl=62 time=9.58 ms
64 bytes from 192.168.16.33: icmp_seq=2 ttl=62 time=9.70 ms
64 bytes from 192.168.16.33: icmp_seq=3 ttl=62 time=8.12 ms
64 bytes from 192.168.16.33: icmp_seq=4 ttl=62 time=28.7 ms
64 bytes from 192.168.16.33: icmp_seq=5 ttl=62 time=10.7 ms
64 bytes from 192.168.16.33: icmp_seq=6 ttl=62 time=8.13 ms
64 bytes from 192.168.16.33: icmp_seq=7 ttl=62 time=24.3 ms
64 bytes from 192.168.16.33: icmp_seq=8 ttl=62 time=22.2 ms
64 bytes from 192.168.16.33: icmp_seq=9 ttl=62 time=19.5 ms
64 bytes from 192.168.16.33: icmp_seq=10 ttl=62 time=17.9 ms

--- 192.168.16.33 ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9016ms
rtt min/avg/max/mdev = 8.115/15.869/28.667/7.175 ms
```

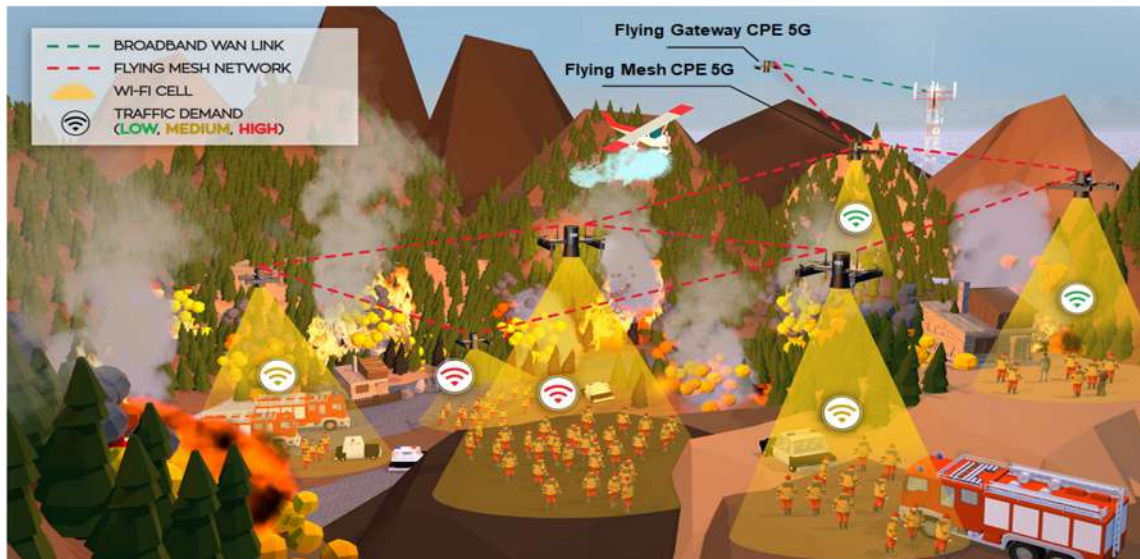
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First Responders Use Case



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Thank you!

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