

Release-13 Cellular IoT Deployments – December 2020

REGION	COUNTRY	OPERATOR	NB-IoT	LTE-M
Africa			2	0
	Kenya	Safaricom	1	
	South Africa	Vodacom	1	
Asia & Pacific			20	10
	Australia	Telstra	1	1
	Australia	Vodafone Australia	1	
	China	China Telecom	1	
	China	China Unicom	1	
	China	China Mobile	1	
	Hong Kong	China Mobile (HK)	1	
	India	Reliance Joi Infocomm	1	
	Indonesia	Telkomsel	1	
	Indonesia	XL Axiata	1	
	Japan	KDDI (au)		1
	Japan	DOCOMO		1
	Malaysia	Maxis	1	
	New Zealand	Spark		1
	New Zealand	Vodafone New Zealand	1	1
	Pakistan	Telenor Pakistan	1	
	Singapore	M1	1	
	Singapore	Singtel	1	1
	South Korea	KT Corp	1	1
	South Korea	LG Plus	1	
	South Korea	SK Telecom		1
	Sri Lanka	Dialog Axiata	1	1
Taiwan	Asia Pacific Telecom (APT)	1	1	
Taiwan	Far EasTone	1		
Vietnam	Viettel	1		
Eastern Europe			19	0
	Bulgaria	A1Bulgaria	1	
	Croatia	A1 Croatia	1	
	Croatia	Hrvatski Telecom	1	
	Czech Republic	Vodafone Czech Republic	1	
	Estonia	Elisa	1	
	Estonia	Telia Estonia	1	
	Hungary	Magyar Telekom	1	
	Kazakhstan	KaR-Tel (Beeline)	1	
	Lithuania	Telia Lithuania	1	
	Poland	Polkomtel	1	
	Poland	T-Mobile Poland	1	

	Russia	Beeline (Russia)	1	
	Russia	MegaFon	1	
	Russia	Mobile TeleSystems (MTS)	1	
	Russia	Tele2Russia	1	
	Slovakia	Slovak Telecom	1	
	Slovenia	A1 Slovenia	1	
	Ukraine	Lifecell	1	
	Ukraine	Vodafone Ukraine	1	
Latin America & Caribbean			2	3
	Argentina	Movistar (Argentina)	1	1
	Brazil	Vivo	1	1
	Mexico	AT&T Mexico		1
Middle East			5	1
	Qatar	Vodafone Qatar	1	
	United Arab Emirates	Du	1	
	United Arab Emirates	Etisalat	1	1
	Turkey	Turkcell	1	
	Turkey	Vodafone Turkey	1	
U.S. & Canada			3	5
	Canada	Bell Canada		1
	Canada	Telus		1
	United States	AT&T	1	1
	United States	T-Mobile US	1	
	United States	US Cellular		1
	United States	Verizon	1	1
Western Europe			19	9
	Austria	T-Mobile	1	
	Belgium	Orange	1	1
	Belgium	Proximus	1	
	Belgium	Telenet	1	
	Denmark	TDC	1	
	Finland	DNA		1
	France	SFR (Altice)	1	
	France	Orange France		1
	Germany	Telekom Deutschland	1	
	Germany	T-Mobile	1	
	Greece	Cosmote	1	
	Ireland	Vodafone Ireland	1	
	Italy	Telecom Italia (TIM)	1	
	Italy	Vodafone Italy	1	
	Netherlands	KPN		1

	Netherlands	T-Mobile	1	
	Netherlands	Vodafone/Ziggo	1	
	Norway	Telenor Norway		1
	Norway	Telia Norge	1	
	Spain	Orange Espana		1
	Spain	Vodafone Spain	1	
	Sweden	Telia Sweden	1	
	United Kingdom	O2		1
Totals			70	28
Global Totals			85	

Cellular Internet of Things (C-IoT)

The Cellular Internet of Things is addressed in 3GPP Release 13 for enhanced Machine-Type Communications (eMTC) in a complementary suite of standards including both LTE Category M1 (LTE Cat-M1 also called LTE-M) and Narrowband IoT (NB-IoT). The new LTE-IoT architecture further reduces cost, improves range, and extends battery life of IoT devices. LTE-M and NB-IoT devices could achieve battery life as high as 10 years. LTE Category M1 User Equipment supporting the broadest range of IoT capabilities, with complexity reduction and coverage enhancements to at least 155.7 dB Maximum Coupling Loss (MCL); data rates up to 1 Mbps utilizing only 1.08 MHz bandwidth; supporting full-duplex FDD, half-duplex FDD and TDD modes, and ability for deployment in any LTE spectrum. LTE-M can also support voice (through Voice over LTE (VoLTE) and full-to-limited mobility, and is designed to fully coexist with regular LTE traffic (Cat-0 and above). LTE Cat-NB1 (NB-IoT) scales down further in cost and power for low-end IoT user cases. NB-IoT User Equipment further reduces complexity and extends coverage to 164 dB MCL. NB-IoT is ideal for low-throughput, delay-tolerant use cases with low mobility support, such as smart meters, remote sensors and smart buildings. Cat-NB1 uses 180 kHz bandwidth and supports stand-alone, guard-band and in-band operation. NB-IoT supports in-band deployment by utilizing a single RB within a normal LTE carrier. It can be deployed in a LTE carrier's guard-band utilizing unused resource blocks while still minimizing interference with neighboring carriers. In standalone mode, NB-IoT can be deployed in re-farmed spectrum from GERAN systems utilizing standalone 200 kHz carriers. Thus, NB-IoT provides flexible deployment options to operators.

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