Standalone 5G, 5.5G, 6G: Opportunities for Public and Mission-Critical Networks

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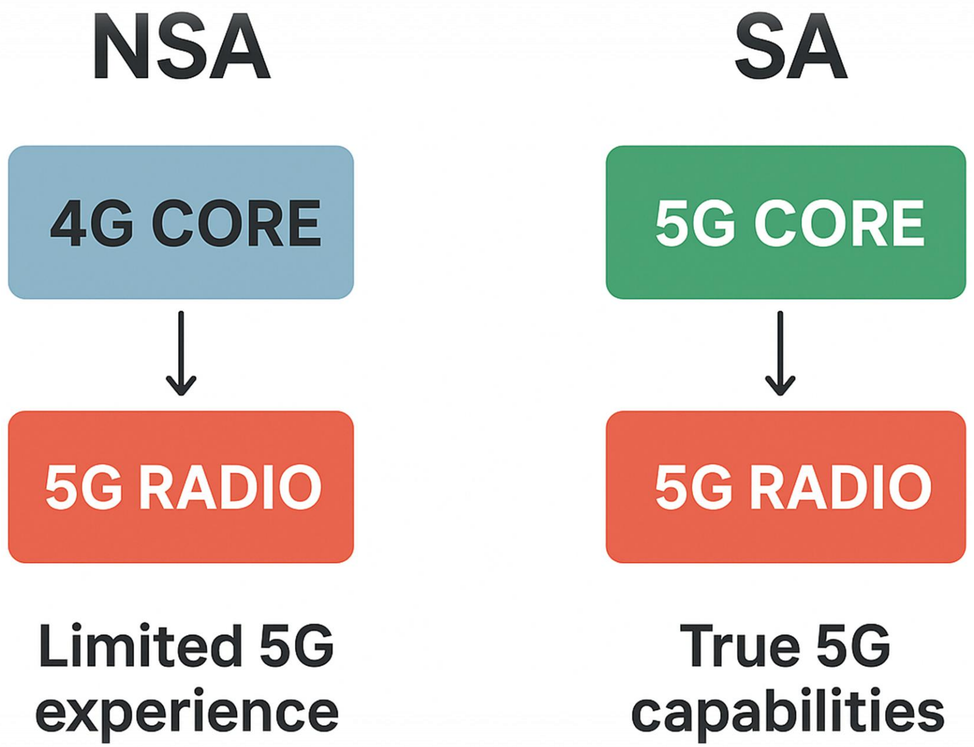
NSA or SA? – The Real Leap in 5G Comes with Standalone

- NSA: only partial 5G experience (4G core, 5G radio)
- SA: a completely new 5G core — true end-to-end 5G capabilities
- Low latency, guaranteed services, real network slicing: possible only with SA
- For PPDR and mission-critical apps, this isn’t a “nice-to-have” but a requirement



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User-Side Benefits: New Services, True 5G Experience

What Does the User Experience? – New Services and Quality

Network slicing

Guaranteed bandwidth, dedicated slice for PPDR, industry, consumers.

Massive IoT

Mission critical voice & data: live audio, video, and on-site data completely separated from public traffic.

Private networks

Enterprise / authority or even temporary pop-up 5G bases.

URLLC

Real-time data connection (<10 ms latency) — robotics, drones, emergency command.

Consumer experience

Gaming, AR/VR, premium services, true continuous 5G experience.

VoNR

Genuine 5G voice calls — fast, stable, top quality.

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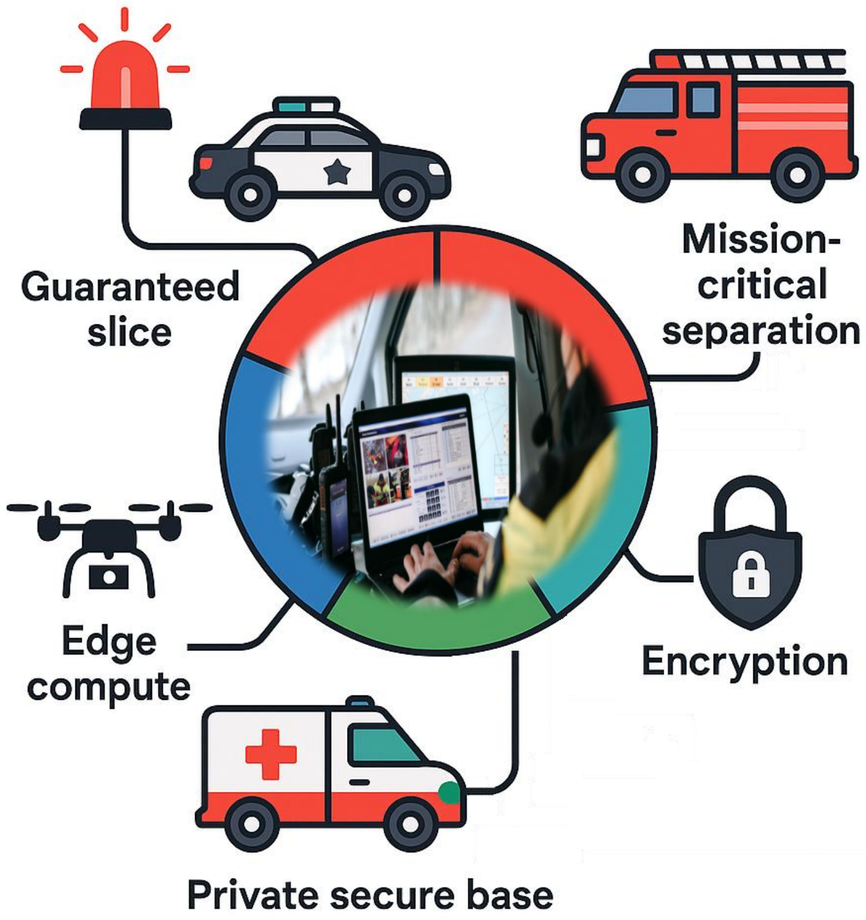
PPDR & Mission-Critical: Why is SA Key?

PPDR & Mission-Critical: Reliable Communication in Every Situation

- Network slicing: police, fire, ambulance each get a separate, guaranteed slice
- Mission critical voice & data: live audio, video, and on-site data completely separated from public traffic
- Edge computing: rapid local processing in emergencies (drone or bodycam video)
- Private networks: quickly deployable, secure bases for events, disasters
- Strong encryption & separation: security, reliability in all critical situations



European Case Studies, International Experience

International Examples: Europe at the Forefront of SA

- Vodafone Germany: slicing for industrial & PPDR, private 5G networks
- Deutsche Telekom: gaming, live broadcast, mission critical slices
- Orange (France/Spain): energy efficiency, PPDR/enterprise slices, Olympic live streaming
- Telefónica O2 (Germany): VoNR, campus 5G, nationwide coverage
- **Common theme**: critical, private, and guaranteed slices are the top priority everywhere!

The Future: 5.5G / 6G

Path to the Future: 5.5G, 6G – Built on SA!

- Without SA, there is no step forward to 5.5G or 6G
- Next stages: advanced slicing, AI-driven networks, sensor integration
- SA is not just another upgrade — it's the launchpad for the next decade's challenges!

Feature	5G SA	5.5G (5G-Advanced)	6G
Peak Data Rate	Up to 10 Gbps	20 Gbps	>100 Gbps
Latency	~1 - 5 ms	< 1 ms	≤ 0,1 ms
Network Slicing	Dynamic	Intent-based, flexible	AI-driven, autonomous
IoT Density	1M devices/km²	Higher	Massive, ubiquitous
AI in Network	Early automation	Native, predictive	Fully autonomous
XR/Metaverse	Limited	Immersive XR-ready	Holographic, tactile
Security	5G-grade	Enhanced, quantum-ready	Quantum-proof
Spectrum	Sub-6G/mmWave	Up to 6GHz/mmWave	Terahertz, visible light

THANK YOU

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