

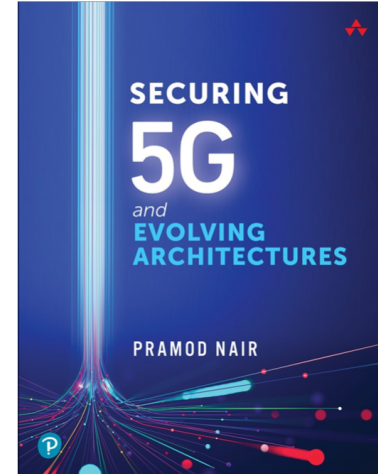


The bridge to possible

# Securing your 5G infrastructure to the edge and beyond

For ENISA

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Security - Cisco  
13 Oct 2021

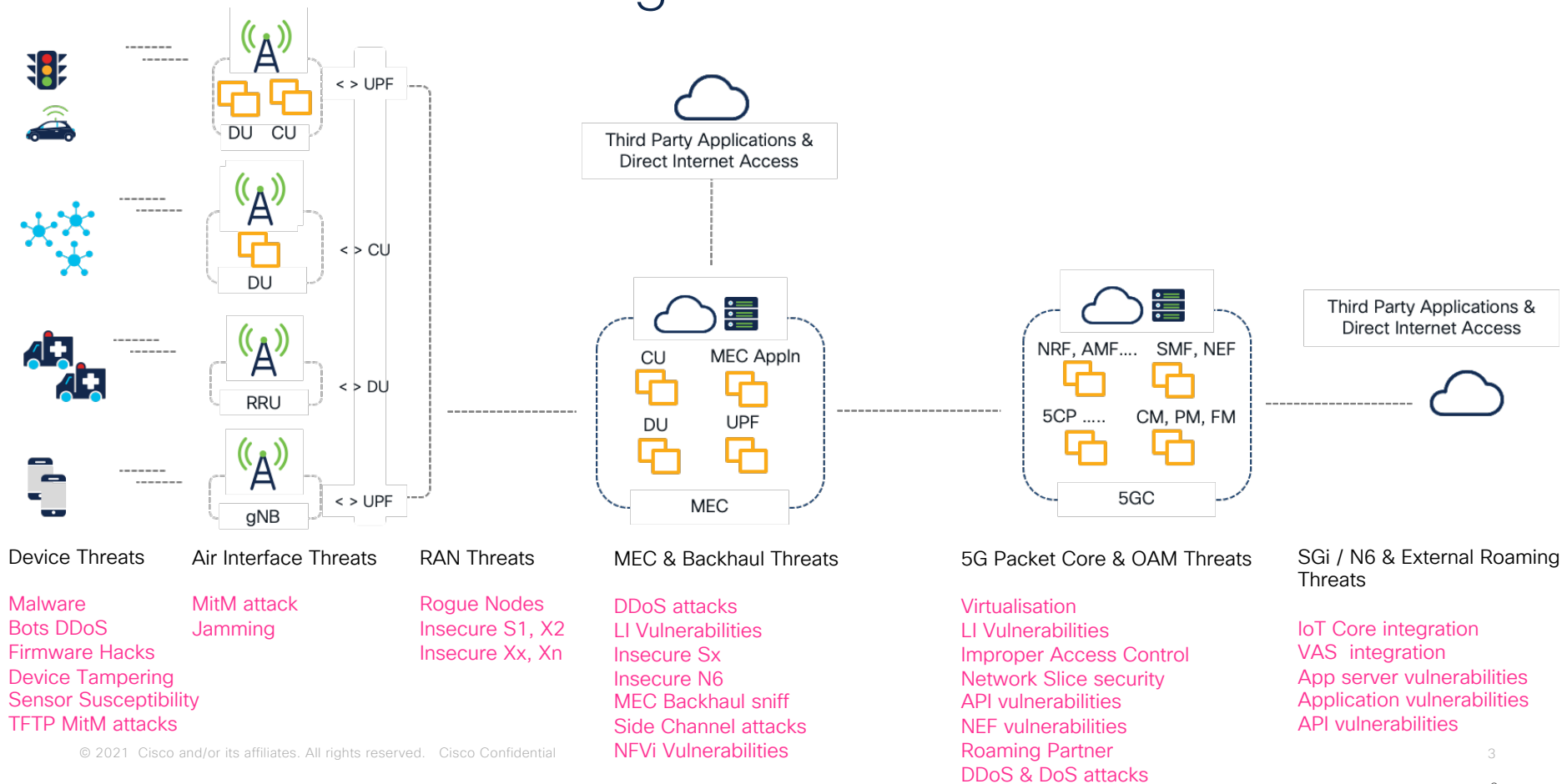


Lives in Ireland , Works for Security, Works with NATO, DoD, NIST & SPs  
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Writing stuff at “blogs.cisco.com”

By the way ... authored vendor agnostic 5G Security book – pre-ordering Oct 2021

<https://www.informit.com/nair>

# E2E threats in evolving architectures



Malware  
Bots DDoS  
Firmware Hacks  
Device Tampering  
Sensor Susceptibility  
TFTP MitM attacks

MitM attack  
Jamming

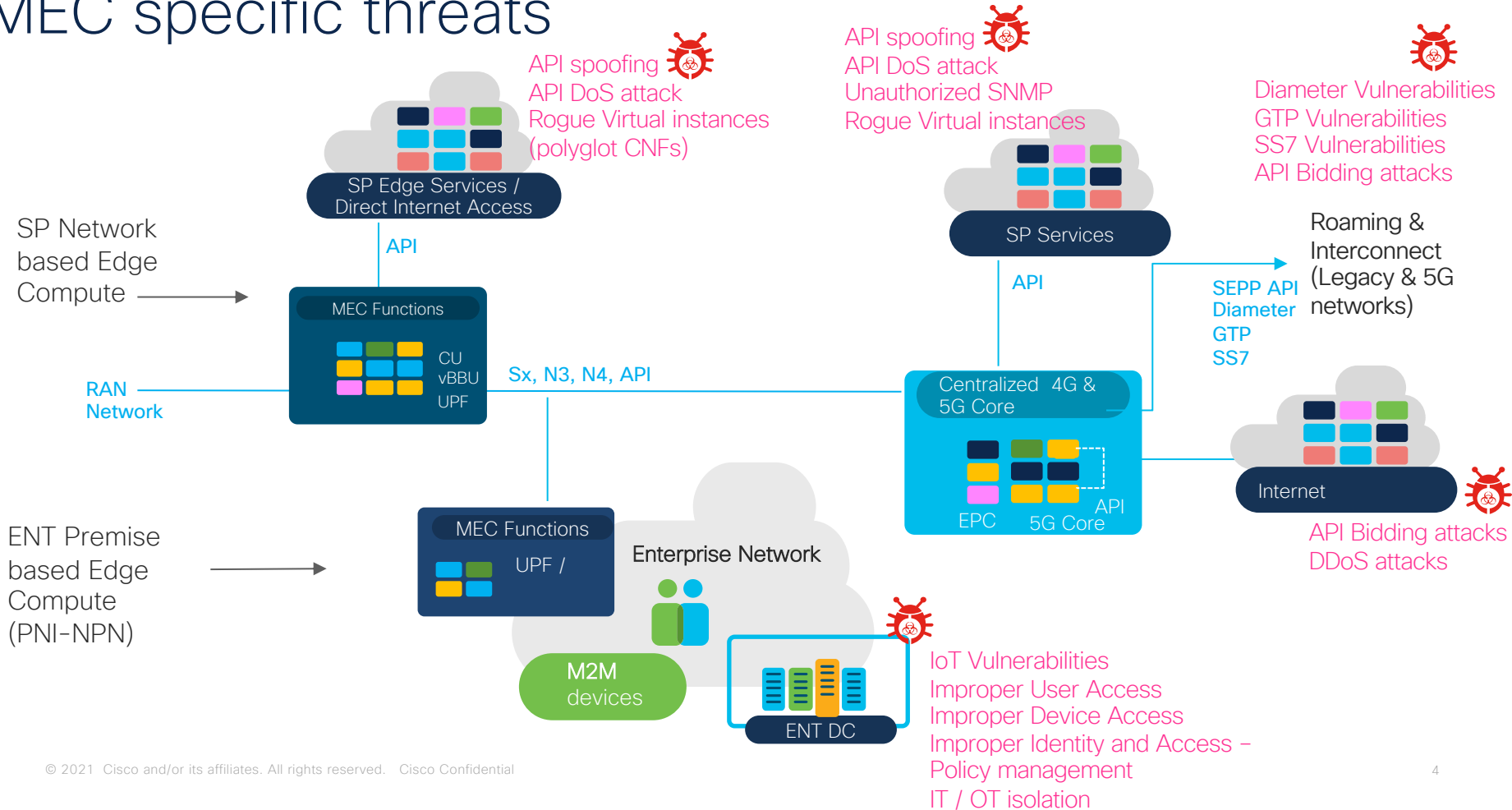
Rogue Nodes  
Insecure S1, X2  
Insecure Xx, Xn

DDoS attacks  
LI Vulnerabilities  
Insecure Sx  
Insecure N6  
MEC Backhaul sniff  
Side Channel attacks  
NFVi Vulnerabilities

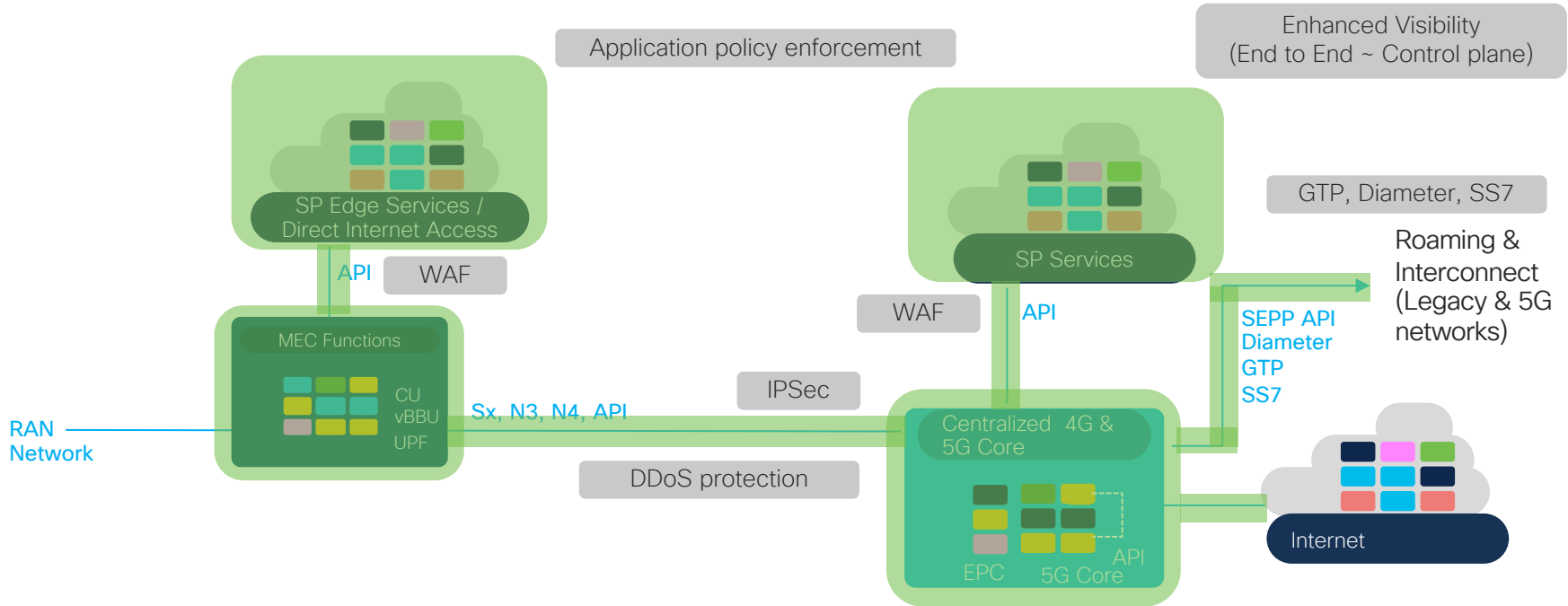
Virtualisation  
LI Vulnerabilities  
Improper Access Control  
Network Slice security  
API vulnerabilities  
NEF vulnerabilities  
Roaming Partner  
DDoS & DoS attacks

IoT Core integration  
VAS integration  
App server vulnerabilities  
Application vulnerabilities  
API vulnerabilities

# MEC specific threats



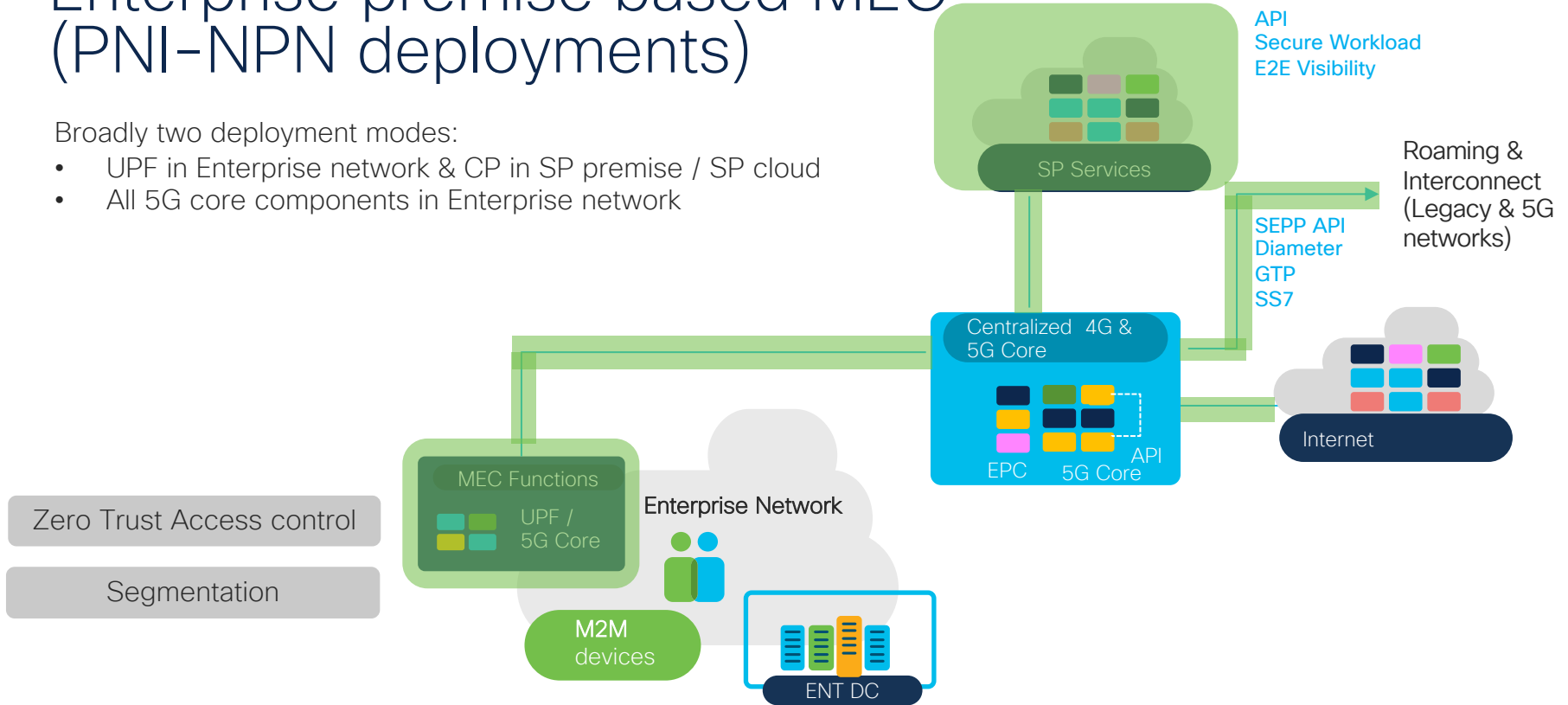
# Securing SP based MEC



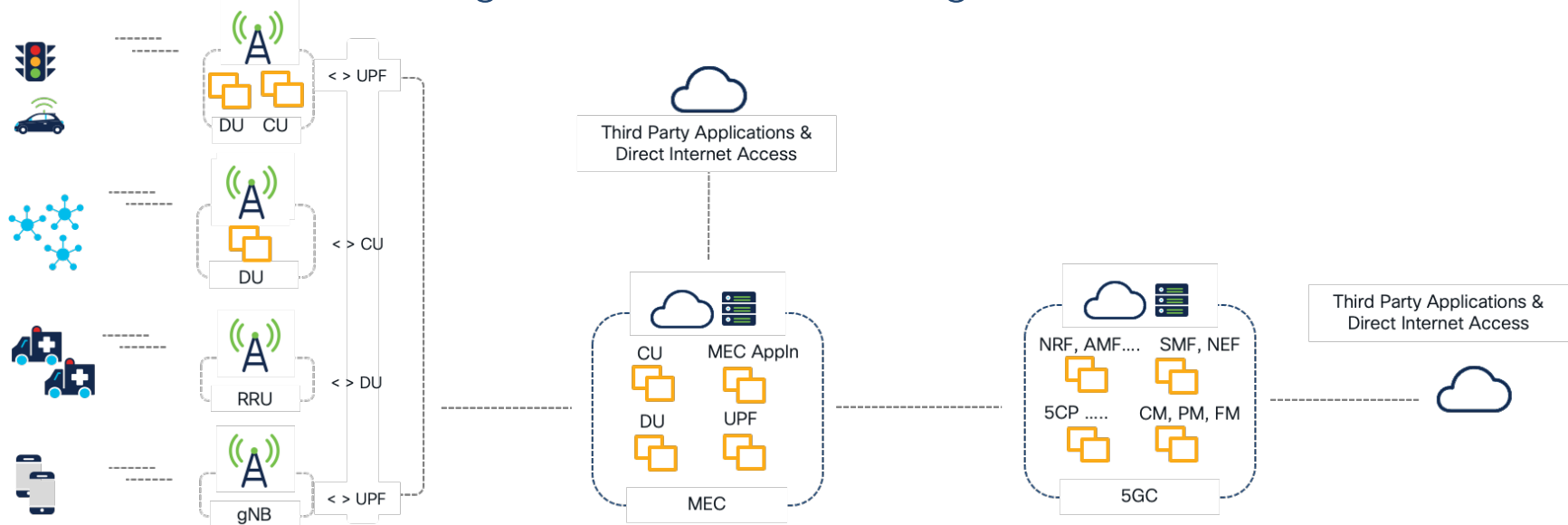
# Enterprise premise based MEC (PNI-NPN deployments)

Broadly two deployment modes:

- UPF in Enterprise network & CP in SP premise / SP cloud
- All 5G core components in Enterprise network

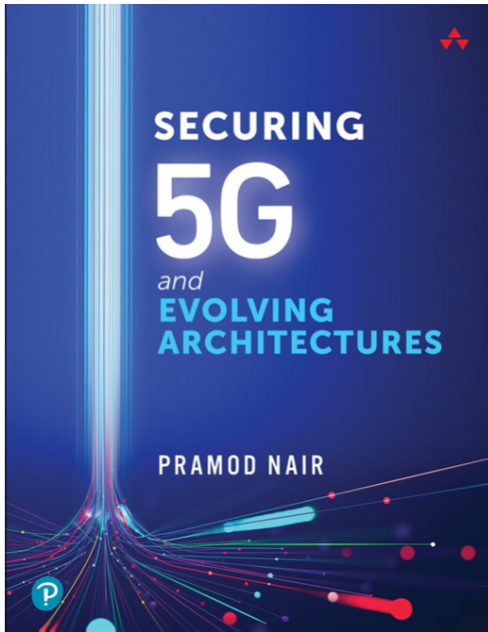


# End to End Threat Mitigation in 5G & Evolving Networks



Device Threats	Air Interface Threats	RAN Threats	Backhaul / Remote DC Threats	5G Packet Core & OAM Threats	SGi / N6 & External Roaming Threats
			Enhanced Visibility & Threat detection Layer	Stealthwatch	
			DNS Protection Layer	Umbrella	
			Application Protection & Policy enforcement	Tetration, 3 <sup>rd</sup> party	
			NGFW & DDoS protection Layer	Firepower, 3 <sup>rd</sup> party	
			Segmentation & Isolation Layer	ISE, Duo	
			Advanced Malware Protection Layer	AMP	

# Interesting reads on 5G security..



5G Security book

<https://www.informit.com/nair>

EU coordinated risk assessment of 5G networks security:

[https://ec.europa.eu/commission/presscorner/detail/en/ip\\_19\\_6049](https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6049)

5G security blog: [https://blogs.cisco.com/sp/5g\\_secure](https://blogs.cisco.com/sp/5g_secure)

Zero Trust 5GC security:

<https://www.cisco.com/c/en/us/solutions/collateral/service-provider/service-provider-security-solutions/white-paper-c11-742166.pdf>





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