## APEX STANDARDS Open RAN Specification Analysis & 3GPP TS Cross-Referencing Platform

## Introducing Apex Standards Open RAN Specification Analysis & 3GPP TS Cross-Referencing Platform

The adoption of Open RAN technology is pivotal for advancing network capabilities and enabling flexible, vendor-neutral environments. This shift towards Open RAN necessitates robust tools for in-depth research and seamless integration across various vendor products. The "Apex Standards Open RAN Specification Analysis & 3GPP TS Cross-Referencing Platform" serves as a critical tool in this context, offering precise and systematic capabilities to search and cross-reference Open RAN specifications down to section-level keywords.

The platform facilitates both forward and reverse searches between Open RAN specifications and 3GPP TS references, crucial for maintaining high research clarity used in network development and policy formulation. The granular level of detail provided by the tool allows researchers and developers to identify specific elements within the Open RAN framework and how they interact with existing and proposed network components.

Effective implementation of Open RAN depends heavily on the quality of cross-disciplinary research and the precise integration of multi-vendor systems into existing RAN environments. Without the proper tools, there is a significant risk of degraded research and development (R&D) quality, which can delay the deployment of multi-vendor and intelligent RAN systems. This platform addresses these risks by enhancing the precision of data analysis, thus supporting high-quality analysis and informed decision-making.

Moreover, the tool has proven to be instrumental for various stakeholders, including government officials who rely on it for implementing high-quality research and formulating informed policies and strategies. It also supports corporate R&D innovation, keeping pace with advancements in 3GPP standards, and provides nuanced research capabilities for academic institutions and universities. This multifaceted utility is critical for navigating the complex patent landscape and leveraging the potential cost savings and operational efficiencies that Open RAN technology promises.

As such, the platform is an important asset for stakeholders aiming to capitalize on the advancements in 5G and future smart RAN technologies. It ensures a smoother transition towards more open, interoperable, and efficient mobile telecommunications infrastructures, promoting a sustainable ecosystem of innovation and growth. To learn more, visit:

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cloud software security										M	dify search
Open RAN WG		Keywords in Specification Filename					a	nd refresh			
Keywords in Section's Technical Clause Earliest Date			Date (YYYY-MM-DE	e (YYYY-MM-DD) Latest Date (YY			(YYYY-MM-DD) 3GPP TS Ref			be	low results
# Spec Sections / History	Working Group reset	Spec	Specification O-RAN Operations and		laintenance Architecture 4.0		Section reset 2.3.2 Abbrevations 5.6.2.2 O-RNA Mitack Surface			21.905	
	WG1: Use Cases and Overall Ar	0- 0-	O-RAN Architecture Description 11.0 O-RAN Architecture Description 11.0 O-RAN End-to-End System Testing Framework Specification 1.0			1.3.2 Abbreviations 2.2.1.3 Solutions 3.3.2 Basic OAM Architecture				28.314 28.315 28.316	
TIFG: Test & Integration Focus Group			0- 0- 0-	RAN End-to-e RAN Operatio RAN Security RAN Security	nd Test Specification ns and Maintenance A Requirements and Co Test Specifications 6.	Specification 5.0 Aaintenance Architecture 11.0 ments and Controls Specification 8.0 scifications 6.0		5.6.2 O-RAN Threat Analysis 4.3.5 SERV#05 O-Cloud software manage 18.6.4 STC-18-18.6-004: Secure Update 19.4 STC-19-19.4-001: Application image 2.1 Informative references	LO-RAN Threat Analysis     SERVB05 O-Cloud software management service     4 STC-18-18.6-004: Secure Update failure for O-Cloud Platform-I- STC-19-19.4-001: Application image deployment security     Informative references	gative	28.533 33.117 33.216
0.5-	WG10: OAM for O-RAN		0- 0- 0-	O-RAN Security Threat Modeling and Risk Assessment 2.0 O-RAN Study on Security Log Management 4.0 O-RAN Study on Security for Application Lifecycle Management 3.0 O-RAN Study on Security for Near Real Time RIC and xApps 5.0			2.1 Normative references Revision history 18.3.3.1 Text description and applicability 3.1 Definition of terms 3.1 Terms				33.401 33.501 33.511 33.523
0.0	WG11: Security Work Group			O-RAN Study on Security for Non-RT-RIC 1.0 O-RAN Study on Security for O-Cloud 5.0 O-RAN Study on Security for Service Management and Orcl O-RAN Study on Security for Shared O-RU (SharedORU) 4.			3.2 Abbreviations 3.3 Abbreviations 3.3 Potential Exploits 18.6.1 STC-18-18.6-001 4.1.1 SMO	3.2 Abbreviations 3.3 Abbreviations 3.3 Potential Exploits 18.6.1 STC-18-18.6-001: O-Cloud Infrast 4.1.1 SMO	tructure Software Package Integ	rity -	33.818 33.848 38.323
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1 selected out of 100 Records   Reset All shortlist within records by spec, ver, section etc Export Results to Excel © CSV with ',' delimiter (US/UK/Asia Excel) © CSV with ',' delimiter (EU Excel)											
Specification File Working Group Name	Specification Title	Publication Version Date	Section	Page Range	3GPP TS Cross- Reference	Excerpt					
WG1: Use Cases and Overall Architecture Workgroup Specification File: O-RAN.WG1.OAM-Architecture-V04.00											
WG1: Use Cases O-RAN.WG1.OAM- and Overall Architecture-v04.00 Architecture Workgroup	O-RAN Operations and Maintenance Architecture 4.0	2021-02-01	3.3.2 Basic OAM Architecture	23-23		interface for 10 mana Performance, Securi management function cycle management 1 For details of the func	gement of ty (FCAPS) ns to ME (s) 5 of O-RAN ctions	the O- <b>Cloud</b> , which has different requ 12 functions, File management fund ) Interface enables the management N cloudified NFs that run on an O-Clo	uirements Configuration, actions, File management a tt of O-Cloud infrastructure oud. For cloudified NFs th	Accounting, and Software as and the de nat run on an	ployment O- <b>Cloud</b> .

FIGURE 1 When using keywords such as "cloud software security," it is expected that most mentions will appear within WG11, the "Security Work Group." However, the importance of searching across other Working Groups should not be underestimated. Using a specialized tool for this purpose enhances efficiency and ensures thoroughness. For example, this tool empowers quick and clear cross-checking with sections like "5.6.2.2 O-RAN Attack Surface" or "3.3.2 Basic OAM Architecture" in WG1, which also include these keywords. Without this tool, key information could easily be missed, potentially causing security implications.

Working Group	Specification File Name	Specification Title	Version	Publication Date	Section	Page Range	3GPP TS Cross- Reference	Excerpt		
WG1: Use Cases and Overall Architecture Workgroup Specification File: O-RAN.WG1.OAD-R003-v11.00										
WG1: Use Cases and Overall Architecture Workgroup	O-RAN.WG1.OAD-R003- v11.00	O-RAN Architecture Description 11.0	R003	2024-02-01	5.1 Overall Architecture of O-RAN	14-16	23.501	3GPP 15 Cross-Reference: Unction, e.g., as in 3GPP 1S 23.501, Clause 5.20 [2]. The framework Orchestration) framework to O-RAN Network Functions and to O-Cloud. As depicted Orchestration) framework to O- RAN Network Functions and to O-Cloud. As depicted in available for the relevant O-RAN Network Functions (i.e., Near-RT RIC, for the relevant O-RAN Network Functions (i.e., Near-RT RIC, O-CU-CP, O-CU-UP, also illustrates that the O-RAN Network Functions can be hosted on the illustrates that the O-RAN Network Functions can be hosted on the O-RAN Network Functions can be hosted on the illustrates that the O-RAN Network Functions can be hosted on the O-CRAN Network Functions. The virtualization of O-RU is orchestration functions. The virtualization of O-RU is not supported in the 5.1 3: Unitrafrace for O-RAN Network Functions and O-eNB 23:01		

FIGURE 2 When searching for "Network Functions Virtualization," often abbreviated as NFV, with cross-referencing to 3GPP TS 23.501 "System architecture for the 5G System (5GS)," the results table specifically highlights where the keyword appears within the document's sections.