

Node-H

Node-H T&W 5G Enterprise Small Cell

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Deployment specialist
brings 5G to market

Carrier-grade RAN solutions for rapid deployment

Node-H has a proven track record of wide-scale deployments at senior operators, and works closely with end-to-end eco-system vendors so that operators can source complete or disaggregated solutions for their Radio Access Network.

Node-H carrier-grade software powers this standalone, fully-integrated, low-cost T&W 5G Enterprise Small Cell, which operates in the widely-used n78 frequency band.

Node-H brings deep technical know-how to solving real-world issues which has allowed carriers worldwide to deploy millions of cells based on Node-H software.

By working closely with technology partners, Node-H supports end-to-end and disaggregated solutions with different gateways and management systems.

Node-H's LTE and UMTS software suites are widely deployed at operators. This complements the 5G offering to provide a full portfolio of RAN technologies.

The Node-H T&W 5G Enterprise Small cell brings turnkey disaggregated cells to public mobile operator uses cases. It also provides the foundation to rapidly address Private



5G networks in vertical markets such as Enterprise real-estate, Industry 4.0 or Campus networks.

The 5G Software Suite supports Centralized Unit (CU) and Distributed Unit (DU), with a clear Control-Plane (CP) and User Plane (UP) split that can be configured in various ways to build 5G RAN technology for small cells.

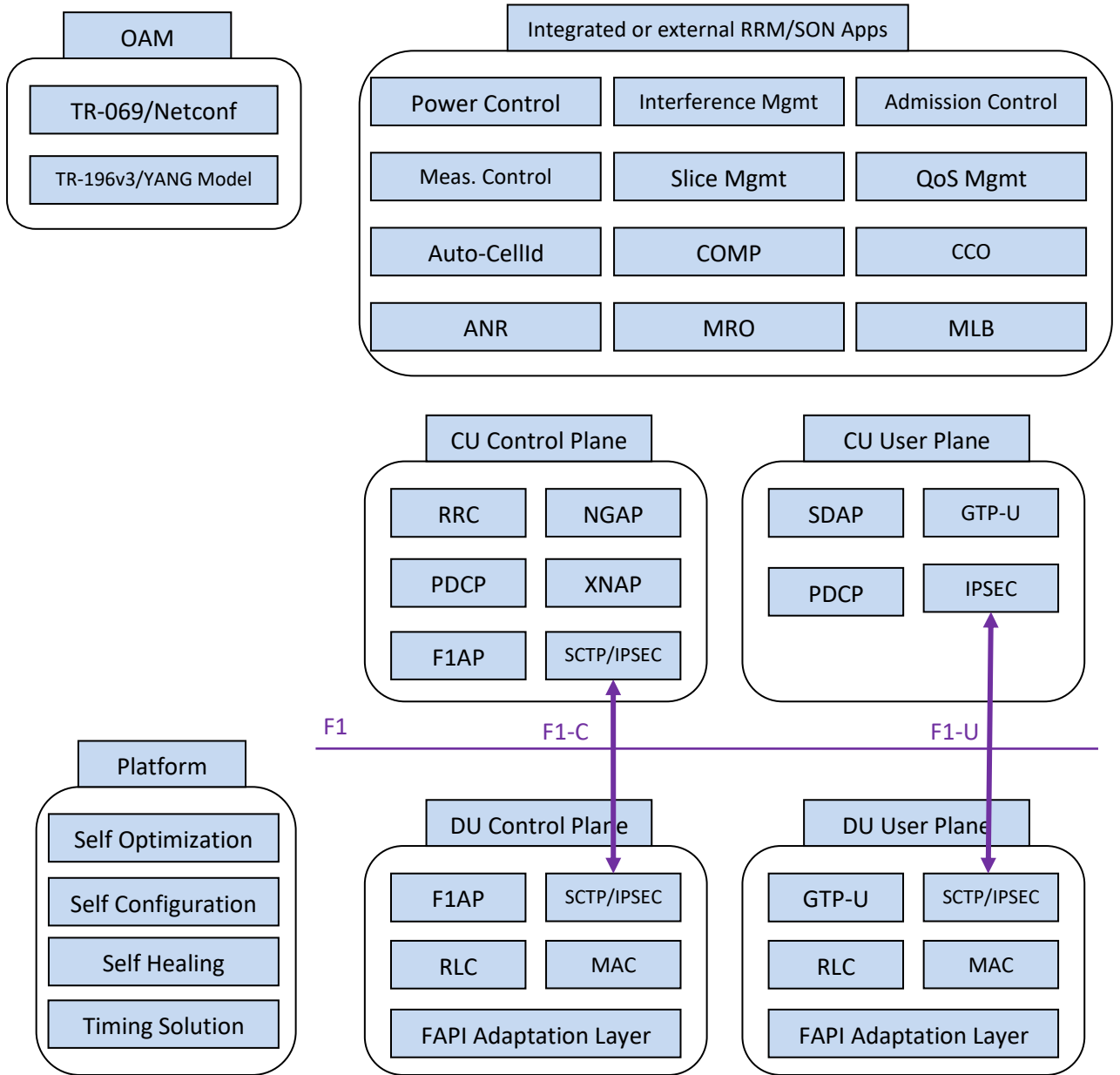
Node-H software follows the standards-based 3GPP architecture, as well as O-RAN and Small Cells Forum defined interfaces, to support interoperability with other vendors. Node-H has focused much effort on interoperability, having integrated Node-H based cells with infrastructure from all of the major network equipment vendors, and received the Chairman's Award from the Small Cell Forum for work on Interoperability.

Choose Node-H because...

Node-H has a uniquely experienced team of specialists who cover all of the major technologies required to implement complete RAN solutions.

Node-H integrates its system software, including a comprehensive security solution, management software, SON and RRM, scheduler and L2/L3 protocols, with T&W's hardware design to deliver a ready-to-deploy solution with the lowest TCO.

gNB 5G Application



The standalone 5G cell software is fully integrated on a secure Linux platform. The cell can be directly connected to the 5G core.



Features

SA Architecture	The Node-H T&W 5G Standalone Small Cell supports the Option 2 – NR Standalone architecture
Carrier Bandwidth	Up to 100MHz including carrier aggregation.
Flexible Numerology	0, 1 or 2.
Power Management	Cell automatically selects power level based on surrounding cells and configuration, including 5G CCO.
Voice Calls and Quality of Service	5G VoNR in accordance with 5QI.
SON/RRM/Interference Management	Integrated SON/RRM for standalone product supporting AutoCell-Id, ANR, Admission control, Interference Mgmt., CCO, MRO, MLB, with self-config, optimization and healing.
Mobility	Measurements allow the cell to support 5G inter and intra Cell handovers.
Network slicing	Multiple slices with network resource isolation.
Operations and Maintenance	The solution implements the SCF defined 5G ‘TR-196v3’, transitioning to O-RAN management over A1 and E2 protocols and service models over Netconf/YANG as this becomes available.
Security	Trusted platform fully secure start-up and code-signing. Ciphering with hardware acceleration, Signaling integrity checking. IPSEC uses hardware acceleration, IKE v2 key management, AES, certificate-based security.
Timing Solution	The timing solution support GNSS and network listen functions. Synchronized cells provide time-sync for other cells in the same sub-net.

Protocol compliance

3GPP Standards (rel16)

TS 38.300 5G; NR; Overall Description; Stage-2
 TS 38.321 5G; NR; Medium Access Control (MAC)
 TS 38.322 5G; NR; Radio Link Control (RLC)
 TS 38.323 5G; NR; Packet Data Convergence Protocol (PDCP)
 TS 38.331 5G; NR; Radio Resource Control (RRC)
 TS 38.401 5G; NG-RAN; Architecture Description
 TS 38.413 5G; NG RAN; NG Application Protocol (NGAP)
 TS 38.423 5G; NG RAN; Xn Application Protocol (XnAP)
 TS 38.425 5G; NG RAN; NR User Plane Protocol
 TS 38.473 5G; NG RAN; F1 Application Protocol (F1AP)
 TS 38.474 5G; NG RAN; F1 Data Transport
 TS 37.324 5G; NR; Service Data Adaptation Protocol (SDAP)

Small Cell Forum, O-RAN, IETF

SCF 222 5G FAPI
 SCF 223 P19 RF Control
 SCF 224 Network Monitor Mode
 SCF 225 5G nFAPI
 SCF 5G ‘TR-196v3’ Management
 O-RAN-WG1-O-RAN Architecture Description
 O-RAN A1 interface: Application Protocol Version
 O-RAN Near-RT RIC Architecture
 O-RAN Near-RT RIC E2 Application Protocol
 IPv4/V6 – IETF RFC 791/2460
 UDP – IETF RFC 768
 SCTP – IETF RFC 4960

Product specifications are subject to change

Hardware

Category	Sub Category	Item	Specification	
5G (FR1) system specification				
Chipset Solution (NPU+QCM)	NPU	Network processor	NXP LS1046A	
	Processor	Baseband Processor	FSM10056	
	RF	RFIC		SDR9000
		PA		SKY66318-11
		Duplexers/Filter		LFB213G60SG8B831, Murata
	Others	DDR		4 GByte DDR4 , None-ECC
		Flash		4 GByte eMMC, QSPI flash 64MB
		PMIC		PM8005 PMX50
Clock			PMK8002, CTS VCTCXO	
Synchronization	Synchronization scheme	Sync Sources	GPS IEEE 1588	
5G Sub-6G RF	Frequency Bands	Frequency Range	n78	
		Standard	3GPP 5G-NR Rel-15	
		Duplex	TDD	
		Band width (MHz)	100MHz	
	Antenna	MIMO Configuration	2 x 2	
		Antenna Location (Internal / External Connectorized)	Internal	
	TX specification	Output power	24dBm(per antenna port)	
Radio conformance	Radio conformance spec.	3GPP TS 38.104, 3GPP TS 38.141-1		
Miscellaneous				
Power POE		Power supply Type, Consumption	DC, less than 35W	
		External Power Supply	AC/DC power adaptor	
		POE	PoE++	
Ethernet			RJ-45 x 2 - 2.5 Gbps NBase-T Ethernet : for backhaul - 1Gbps Ethernet : LMT SFP x 1 (2.5 Gbps, for optical backhaul)	
Weight			< 2.5 Kg	

